DEPARTMENT OF AGRICULTURE, CEYLON.

ANNALS

OF THE

ROYAL BOTANIC GARDENS, PERADENIYA.

EDITED BY

T. PETCH, B.A., B.Sc.

VOLUME VI., PART II., NOVEMBER, 1916.

IMPERIAL BUREAU 7 SEP. 1917 OF MYCOLOGY

CONTENTS.

	PAGE
PETCH, T.—The Girth Increment of *Hevea brasiliensis* ..	77
PETCH, T.—A Preliminary List of Ceylon Polypori ..	87
PETCH, T.—Ceylon *Lentini*	145
PETCH, T.—Revisions of Ceylon Fungi (Part IV.) ..	153

NOTES.

Colombo:

H. M. RICHARDS, ACTING GOVERNMENT PRINTER, CEYLON.

London:

DULAU & CO., 37, SOHO SQUARE, W.

[*All rights of Reproduction and Translation reserved.*]

Price Six Rupees.

2e IV-17

DEPARTMENT OF AGRICULTURE, CEYLON.

THE ANNALS.

The subscription rate is, for regular residents in Ceylon, Rs. 2·50 per annum, post free, payable in advance to the Director of Agriculture, Peradeniya; for residents in other countries, Rs. 6 per annum, post free, payable in advance to the above, or eight shillings, payable to Messrs. Dulau & Co., 37, Soho Square, London, W.

The "Annals" appear at irregular intervals, as matter is ready for publication. Individual numbers or papers may be purchased from the Director of Agriculture, Peradeniya, or from Messrs. Dulau & Co., at prices exceeding the subscription rate.

THE BULLETINS.

Bulletins of the Department of Agriculture, which contain articles on planting, agricultural, and horticultural topics, are published from time to time. These take the place of the Circulars formerly published. The subscription is Re. 1 per annum, post free, in Ceylon, and Rs. 2·50 per annum, post free, abroad.

NOTICE TO CONTRIBUTORS.

All contributions should be addressed to the Botanist and Mycologist, Peradeniya, Ceylon. They should be typed on one side of the paper only; figures should be ready for reproduction, and planned so as to fill a plate properly.

Each contributor is entitled to receive gratis fifty separate copies of his Paper.

The Girth Increment of Hevea brasiliensis.

BY

T. PETCH, B.A., B.Sc.

IN January, 1912, regular girth measurements on *Hevea brasiliensis* were begun at Peradeniya as part of an investigation into certain phases of the physiology of the tree. It was not, however, found possible to carry out the investigation planned, but the girth measurements were continued ; and as few such measurements relating to the growth of trees in the tropics have been published, it has been thought desirable to place them on record.

Sixteen trees were selected, eleven of which were seven years old, and the remaining five five years old. They formed three groups, of seven, four, and five trees, respectively. The trees of the first two groups were planted 20 feet by 30 feet in tea. The first group consisted of seven consecutive trees in the same row on the same level. The second group was situated a short distance away, in a slight depression, about 6 feet below the level of the first group, the four trees standing consecutively in the same row. The trees of the third group were more closely, but irregularly, planted through cacao, the latter being planted at the same time as the *Hevea*. All three groups were within a distance of 200 yards.

As numbered in the present account, trees 1, 4, 8, 9, 10, 11, 12 constitute the first group, trees 2, 5, 13, 14 the second, and trees 3, 6, 7, 15, 16 the third.

Measurements were taken weekly, on the same day each week at 9.30 A.M., and as the trees were being grown under ordinary estate conditions, they were taken at a height of 6 feet from the ground, in order to avoid any errors due to the removal of the bark during tapping. A line was drawn on the stem at that height, and measurements were made along the line with a steel tape.

When the measurements were begun, trees Nos. 1 to 8 were untapped, while the remainder had been in tapping for one

or two years. All the trees were rested, *i.e.*, not tapped, from February to June, 1912, after which tapping was resumed on the trees Nos. 9 to 16. In October, 1912, tapping was begun on trees Nos. 4 to 8. In August, 1913, trees Nos. 1, 2, 5, 10, 11 were felled.

The girths of the trees, at a height of 6 feet, varied from 19·8 to 44·3 cm. The difference were not in any way related to the position of the trees, both the largest and the smallest trees being situated in the same group. Tree No. 4, girth 20·2 cm., stood next to tree No. 9, girth 44·3 cm.

Measurements were taken to the nearest millimetre. The results have been grouped in periods of four weeks each, or thirteen for the year. The curves on Plates VIII.–XI. show the total increment in millimetres from the beginning of the year up to the end of each four-week period as ordinates, at distances of 1 centimetre for each period. The curves for each tree for the consecutive years 1912, 1913, 1914 are grouped together under one another.

On Plate XII. the total increment from the beginning of the year is given for each week for the months January to March, the curves of the three years, in the case of each tree, being arranged on the same horizontal line. As before, the ordinates represent the actual increment in millimetres, while the weeks are represented by distances of 5 millimetres each.

The minimum temperature at Peradeniya ranges from about 68° F. to 73° F., and the maximum from 86° F. to 91° F. The rainfall is divided between two distinct periods, corresponding to the north-east and south-west monsoons. January, February, March are usually dry months, the temperature gradually increasing during that period. April should be wet and hot, but rather less rain falls in May. In June and July the heavy rains of the south-west monsoon prevail, and the temperature falls. August and September have only about one-half the rainfall of June and July. In October the rains of the north-east monsoon set in, and continue into December.

There is thus, on the average, one distinctly dry period, January–March, and two periods of heavy rain, June–July and October–November. The coldest nights and the hottest days occur in the dry period.

Hevea brasiliensis, after attaining the age of two years, sheds its leaves completely, once a year, at Peradeniya, and, as in the case of most other deciduous trees which have a yearly period, this occurs during the dry season. Flowers are produced immediately after, or simultaneously with, the new leaves (about March–April), and the fruit ripens in August–September.

From the curves for 1912 it will be seen that there is no increase in growth, as a rule, during the dry period, January–March, in which the leaf-fall occurs. As far as is indicated by external measurements, growth in thickness begins at the end of March or the beginning of April, and continues at a fairly uniform rate until about October. It then falls off to about half its former rate during October, November, December, or it may cease altogether at any date during these months.

It has to be borne in mind that the data here recorded were obtained by external measurements, as in the earlier experiments on the same subject in temperate climates, and they do not necessarily give any indication of the actual activity of the cambium at a given date. Brown (1) has pointed out that "any data secured through bark measurement are unreliable because of the continual changes going on in the older parts of the secondary cortex, and changes which bear no relation to the newly-forming rings. As a result, only broad generalizations can be drawn from data based on such methods." It is probable that such changes are of minor importance in the present case, as the trees were young and the bark smooth and continuous during the period under review.

In Brown's experiments on *Pinus Strobus*, based on the determination of the actual increment in the annual ring, two periods of optimum growth intensity during the year were observed. "The cambium may be very active for a time, then slacken its growth, this to be followed again by renewed activity, with a final slump toward the end of the growing season." He notes that this had been previously determined by Friedrich, who made his observations with the help of calipers and found that in both coniferous and hard-wood trees there were two periods of growth, one lasting to the end of May, then sinking until the middle of June,

followed later by another maximum again in July, and then rapidly diminishing and ceasing altogether. A similar course of growth has been postulated for trees in countries which enjoy two well-defined rainy seasons, it being supposed that a period of maximum growth would coincide with each wet season. The data obtained in the present case do not, however, support this conclusion, the growth in general declining regularly during the second wet season, or ceasing altogether.

In exceptional cases a tree may show no increase in girth between two consecutive weekly measurements in the growing season. Thus, tree No. 4 showed no increase during the first week of June, 1913, and again during the second and third weeks of July of the same year. The largest tree, No. 9, showed no increase for three weeks in July, 1912.

In 1913 the rainfall for January was abnormal, 22·5 inches, instead of the average 3·5 inches. Probably for that reason nine of the trees show a marked increase in girth during January and February, due to a continuance of the growing period into those months. The contrast between the growth during the first three months of 1913 and that of 1912 and 1914 is most marked in the case of tree No. 12. Seven of the trees, however, fail to exhibit any response, so far as the girth increment is concerned, to the abnormal rainfall.

In several cases it is evident that the curves for the two years are strikingly similar, and more or less independent of external conditions. In the case of tree No. 3 growth ceases in both years at the beginning of November, and does not begin again until March. Tree No. 6 presents a similar case. But in the case of tree No. 15 growth is continued each year into February. The first two of these trees have a non-growth period (not a leafless period) of four or five months, while the third has only one of four to seven weeks. These instances would appear to indicate that the character of the growth curve is, in some cases, peculiar to the individual tree, and is to some extent an expression of the "individuality" of the tree rather than a reflection of external conditions.

The curves for the first three months of each year are shown on Plate XII., the two vertical lines indicating the time of the change in the colour of the leaf and of the full

development of new leaf respectively. Generally speaking, this occupies from four to six weeks. Within a week after the change of colour all the leaves have fallen and the tree is bare. In another week the buds are shooting. A week later the new leaves are evident, but another two or three weeks elapses before they are fully formed and rigid. As an example, the records of tree No. 3 for 1912 may be quoted. These are as follows :—

January 28 : Leaves changing colour.
February 4 : Leafless.
February 11 : Buds just shooting.
February 18 : Leaves just developing.
February 25 : Leaves half normal size.
March 3 : Leaves full size but limp.
March 10 : Leaves rigid.

These records were, as previously stated, taken only at weekly intervals, and the exact date of the final change may lie anywhere between the last two dates.

In 1913 the period occupied by these changes was greatly extended, in one case to ten weeks. This was due chiefly to the irregular "wintering" of the trees, the different branches of the same tree shedding their leaves at different times, so that several trees were never entirely leafless. For example, the upper branches of tree No. 6 began to lose their leaves on January 5, and on February 23 their new leaves were fully formed, but the leaves on the lower branches were then just beginning to fall, and these branches did not complete the change until March 16. The total change of leaf was spread over ten weeks, but the tree "wintered" in two distinct halves. This individuality of different branches on the same tree is often a marked feature in the leaf-fall of deciduous trees in the tropics, as has been previously recorded by Wright and others, but it is not usually so pronounced in the case of *Hevea brasiliensis* as it was in this abnormally wet season.

In 1914 the period occupied by these changes was shorter than usual, being only three to four weeks.

In general no increase in girth occurs during the change of leaf. Some exceptions to this rule will be noted in the

curves for 1913, but these are, at least in part, explainable by the irregularity in the leaf-fall which occurred in that year. How long before the leaf-fall the growth in girth ceases depends apparently upon the individual tree. It may be three months, as in tree No. 3, or only one or two weeks, as in tree No. 15. In general the increase in girth begins again from one to three weeks after the leaves are fully formed.

Brown states that, in *Pinus Strobus*, growth in thickness begins before growth in length in each year. His data were obtained from determinations of cambial activity, and are therefore more accurate than those of the present case, but he quotes Christison's results, which were obtained from bark measurements, as agreeing with his own. The measurements on *Hevea* indicate that in this species growth in length occurs before the stem increases in thickness by any amount perceptible by external measurements at a height of 6 feet.

In Ceylon increase in length in the stems and branches of *Hevea brasiliensis* proceeds by sudden and brief bursts. A green shoot, varying in length from about 3 inches on the lower branches to about 2 feet in the case of a leader, is produced, bearing rudimentary leaves ; the latter develop to their full size, remain limp for a few days, and then become rigid and assume their normal position. The leaves are born chiefly towards the apex of the new shoot, and the petioles of the lower are elongated, so that the leaves form, more or less, a rosette. The whole process occupies from two to four weeks at the elevation of Peradeniya.

At various times during the year other outbursts of new shoots occur. Indeed, it is scarcely possible to look at a *Hevea* plantation of about ten years' standing at any time without seeing new shoots on some of the trees. The pale green of the new shoots contrasts strongly with the darker older foliage, and consequently the phenomenon is one well-known to all rubber planters. But opinions differ widely as to the number of times it occurs during the year, as many as six having been claimed.

Observations on the measured trees at Peradeniya have shown that at this elevation, in addition to the first re-clothing of the tree, there may be two main periods of production

of new shoots on any given tree, one at the end of April and the beginning of May, and the other at the end of June and the beginning of July. But all the branches of any given tree do not produce new shoots at the same time, and consequently their appearance is prolonged, so that the two periods overlap, and the second is indefinitely extended. On a tree which showed new growth in the leader on June 23, the lower branches were elongating on August 25. Counting the first of these dates as the beginning of the third burst of the year, this period of growth was spread over two months. The "individuality" of the separate branches has here full play, and it is this which has given rise to the exaggerated idea as to the number of times these growth bursts occur during the year. On any given tree of this species there may be, including the first growth after the leafless period, three outbursts of new shoots during the year at Peradeniya. On the other hand, many trees in the immediate neighbourhood may not produce any new foliage after the first. In the case of a leader three new lengths may be produced in the year, but on the lower branches it would appear that at most only two occur.

It will be noted that in several of the curves a decrease in girth is indicated during the dry months. As the unit adopted is only a millimetre, it might be considered that this decrease is only an apparent one, and due to errors of measurement. But as the measurements were always repeated whenever no increase was shown, and as the decrease continues in several cases for some weeks, it is believed that the figures indicate an actual occurrence. In 1912 this decrease varied from 1 to 3 millimetres, and was exhibited by twelve trees out of the sixteen. In the wetter season of 1913 it was in no case greater than 1 millimetre, and was shown by only seven trees. In 1914 it occurred in four trees out of ten, and varied from 1 to 2 millimetres. There was no scaling off of the bark during these periods, the pencil mark which served to indicate the place of measurement remaining distinct throughout. It would appear, therefore, that a slight shrinkage of the stem can occur in the dry season.

It has been stated that *Hevea brasiliensis* responds rapidly, by alterations in girth, to differences in the amount of water

available. It has, for example, been recorded that if a " ligature " be tied tightly round the stem in the early morning, it will be found to be quite slack at midday, and the explanation has been given that this is due to the shrinkage of the stem owing to the loss of water during the day by transpiration. Actual figures have been given, *e.g.*, that a tree 36 inches in girth will decrease by half an inch between sunrise and midday (2). The kind of ligature employed has not been recorded, but it may be pointed out that if a piece of string were tied round the stem in the early morning when everything is damp it would naturally become slack, through drying, by midday on a dry day.

It has further been stated that *Hevea* of the same age as those of the present account and at the same elevation, 20 inches in girth, will show an increase of a quarter of an inch in girth after a heavy shower, as determined by ordinary estate measurements.

Both these effects have been sought for unsuccessfully in the case of the trees whose measurements are recorded here. Measurements have been taken in the early morning, at midday, and in the evening, but they did not show any appreciable difference. Again, measurements have been taken after heavy rain which followed several days of fine weather, when rain fell on the day, or the next day after, the usual measurements had been recorded, but in no case was any increase observable.

The average increase in girth at Peradeniya during the maximum period of growth is about 2 millimetres per week. A sudden increase of 6 millimetres would, therefore, equal three weeks' growth. Moreover, if such increases really occurred, one might expect to find corresponding decreases during the dry weather, but the greatest decrease recorded only amounts to 3 millimetres in nine weeks, and it was never greater than 1 millimetre per week. In ordinary estate measurements, in which the trees are not measured at a fixed line, but only approximately at a height of 3 feet, it has been found that the possible error is fully half an inch.

The initial girths of the trees and the increments for each year are given in the following table. The increments are tabulated separately for January–March, the dry season, April–October,

the period of most active growth, and November–December. All measurements are given in centimetres :—

No. of Tree.	Initial Girth, 1912.	Jan. to March.	April to Oct.	Nov. to Dec.	Initial Girth, 1913.	Jan. to March.	April to Oct.	Nov. to Dec.	Initial Girth, 1914.	Jan. to March.
1	19·8	0	7·1	0·8	27·7	0·3	—	—	—	—
2	21·6	0·3	5·7	0·5	28·1	0·2	—	—	—	—
3	23·8	0·1	4·2	0	28·1	0·5	3·9	0	32·5	0·5
4	20·2	0·3	5·7	0·4	26·6	0·2	5·0	0·4	32·2	0·1
5	20·2	0·2	5·2	0·8	26·4	1·1	—	—	—	—
6	25·0	0	5·0	0·2	30·2	0	3·4	0·4	34·0	0·1
7	28·0	0·1	7·0	1·1	36·2	0·8	5·8	1·1	43·9	0·3
8	23·5	0	7·3	1·1	31·9	1·0	7·1	1·3	41·3	0·4
9	44·3	0·2	2·8	1·1	48·4	1·0	2·7	1·0	53·1	0·3
10	31·5	0	6·1	1·1	38·7	0·4	—	—	—	—
11	32·6	0·1	6·0	1·3	40·0	1·0	—	—	—	—
12	35·0	0	8·4	1·2	44·6	0·8	7·6	0·5	53·5	0
13	36·9	0·1	5·0	0·1	42·1	0·1	5·3	0	47·5	0·3
14	31·2	0·1	8·5	1·0	40·8	0·5	6·9	0·6	48·8	0·2
15	38·6	0·4	6·2	1·0	46·2	0·7	4·1	1·0	52·0	0·9
16	33·2	0·1	5·8	0·3	39·4	0·1	5·5	0·7	45·7	0·4

The percentage increases for each year are given below :—

No. of Tree.	Girth, January, 1912.	Percentage Increase, 1912.	Girth, January, 1913.	Percentage Increase, 1913.
1	19·8	39·9	27·7	—
2	21·6	30·1	28·1	—
3	23·8	18·1	28·1	15·7
4	20·2	31·7	26·6	21·1
5	20·2	30·7	26·4	—
6	25·0	20·8	30·2	12·6
7	28·0	29·3	36·2	21·3
8	23·5	35·7	31·9	29·5
9	44·3	9·3	48·4	9·7
10	31·5	22·8	38·7	—
11	32·6	22·6	40·0	—
12	35·0	27·4	44·6	20·0
13	36·9	14·1	42·1	12·8
14	31·2	30·8	40·8	19·6
15	38·6	19·7	46·2	12·6
16	33·2	18·7	39·4	16·0

As previously stated, the first three trees were untapped during the whole period, the next five were not tapped during the period of most active growth of the first year, while the last eight had been tapped for some time previous to 1912. There does not appear to be any marked effect in the growth of trees Nos. 4 to 8, which can be attributed to the tapping. The poor growth of tree No. 9, the initially largest tree, will be noted ; this tree bore a heavy crop of seed in both years.

RAINFALL.

	1911. Inches.	1912. Inches.	1913. Inches.	1914. Inches.	Average, 31 Years. Inches.
January	1·68	0·39	22·29	1·65	3·58
February	—	—	0·91	·45	1·75
March	8·02	4·74	3·99	4·33	4·96
April	3·67	5·83	9·26	5·22	10·45
May	1·43	4·20	4·43	5·39	6·02
June	15·93	9·79	7·21	9·59	10·26
July	8·13	15·08	5·54	5·35	8·13
August	4·85	4·59	5·20	4·50	6·00
September	7·96	2·44	2·22	8·78	6·72
October	12·54	10·89	32·03	14·41	14·02
November	7·85	9·67	11·14	8·77	9·77
December	20·23	14·84	16·18	16·27	9·18

References.

(1) BROWN, H. P.—Growth Studies in Forest Trees. 2. Pinus Strobus L. Botanical Gazette, LIX., pp. 197–240.

(2) RIDLEY, H. N., and DERRY, R.—Agricultural Bulletin of the Straits and Federated Malay States, IX., p. 258.

Explanation of Plates.

Plate VIII.—Growth curves of three untapped trees.

Plate IX.—Growth curves of four trees tapped from October, 1912.

Plate X., XI.—Growth curves of tapped trees.

Plate XII.—Growth curves of the above trees from January to April.

As the vertical lines which indicate the dates of the change in colour of the leaf and the full development of the new leaf respectively are not clearly indicated on Plate XII., these dates are given in the following table:—

No. of Tree.	1912.	1913.	1914.
1	Feb. 11–Mar. 10	Jan. 26–Mar. 16	—
2	Feb. 11–Mar. 10	Feb. 9–Apr. 6	—
3	Feb. 4–Mar. 10	Jan. 5–Mar. 2	Jan. 23–Feb. 15
4	Jan. 28–Mar. 10	Feb. 9–Mar. 23	Feb. 15–Mar. 8
5	Feb. 18–Mar. 24	Feb. 9–Apr. 6	—
6	Jan. 28–Mar. 10	Jan. 5–Mar. 16	Feb. 15–Mar. 15
7	Feb. 11–Mar. 17	Mar. 2–Mar. 30	Feb. 15–Mar. 15
8	Feb. 11–Mar. 10	Feb. 16–Mar. 30	Feb. 15–Mar. 15
9	Feb. 11–Mar. 10	Feb. 9–Mar. 30	Feb. 15–Mar. 15
10	Feb. 11–Mar. 17	Feb. 16–Mar. 30	—
11	Feb. 4–Mar. 10	Feb. 9–Mar. 23	—
12	Feb. 11–Mar. 17	Feb. 9–Mar. 30	Feb. 22–Mar. 15
13	Jan. 21–Mar. 3	Feb. 16–Mar. 23	Feb. 15–Mar. 15
14	Feb. 4–Mar. 3	Feb. 9–Mar. 23	Feb. 15–Mar. 15
15	Feb. 11–Mar. 17	Mar. 2–Mar. 23	Mar. 1–Mar. 22
16	Feb. 11–Mar. 17	Feb. 16–Mar. 23	Feb. 15–Mar. 15

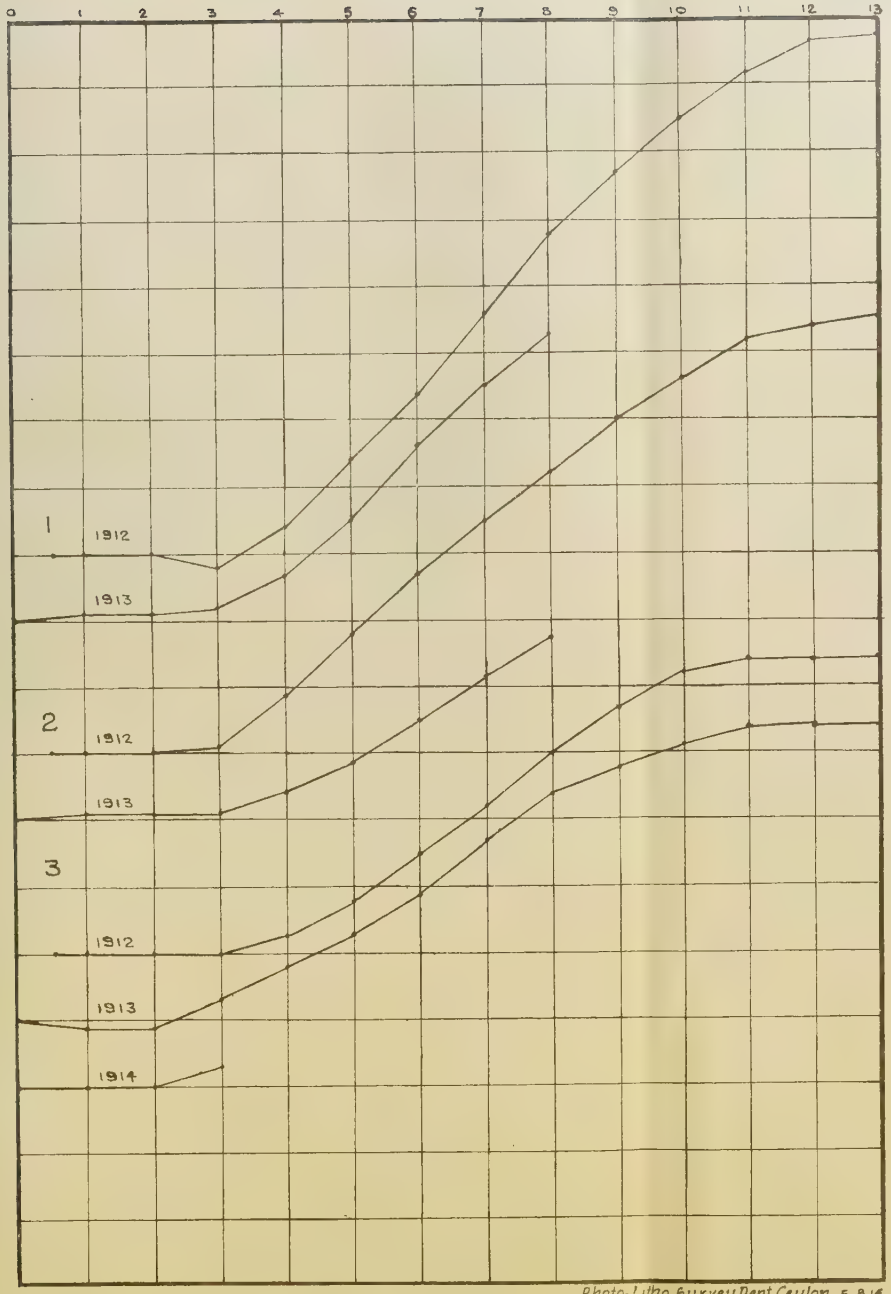

Photo-Litho Survey Dept Ceylon. 5.8.16.

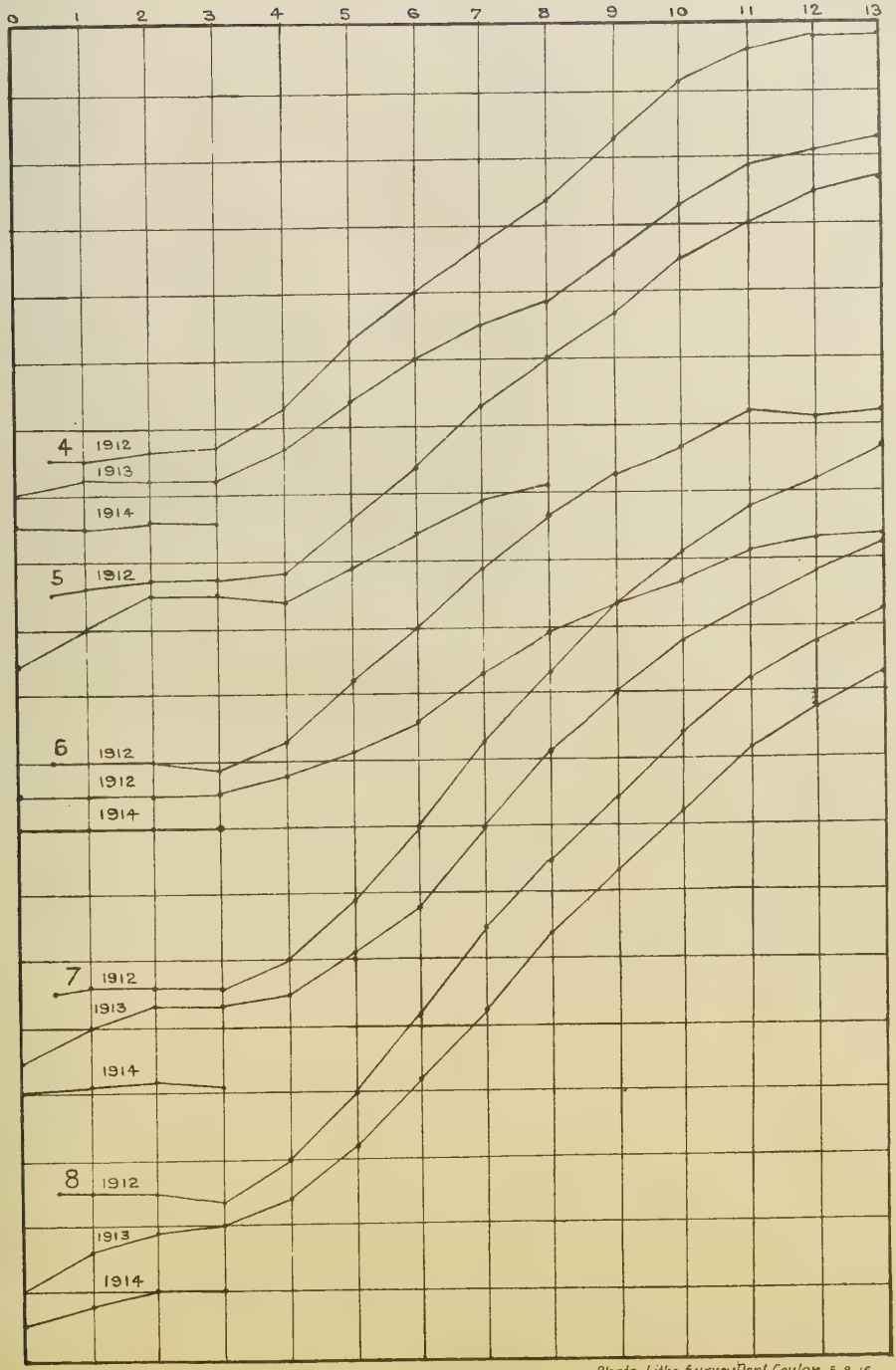

Photo-Litho Survey Dept Ceylon 5 8 16.

PLATE X

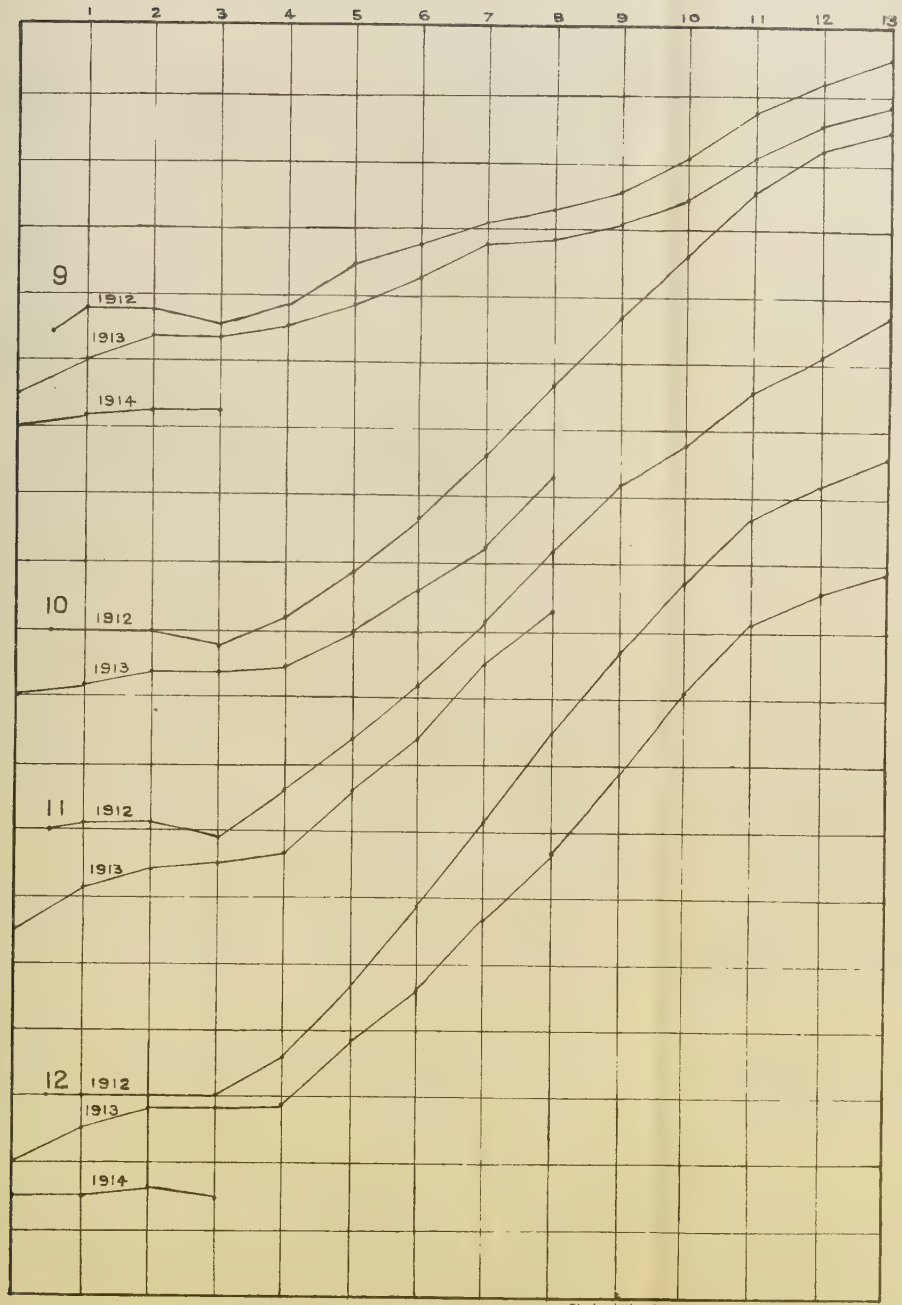

Photo-Litho Survey Dept Ceylon 5 8 16.

PLATE XI

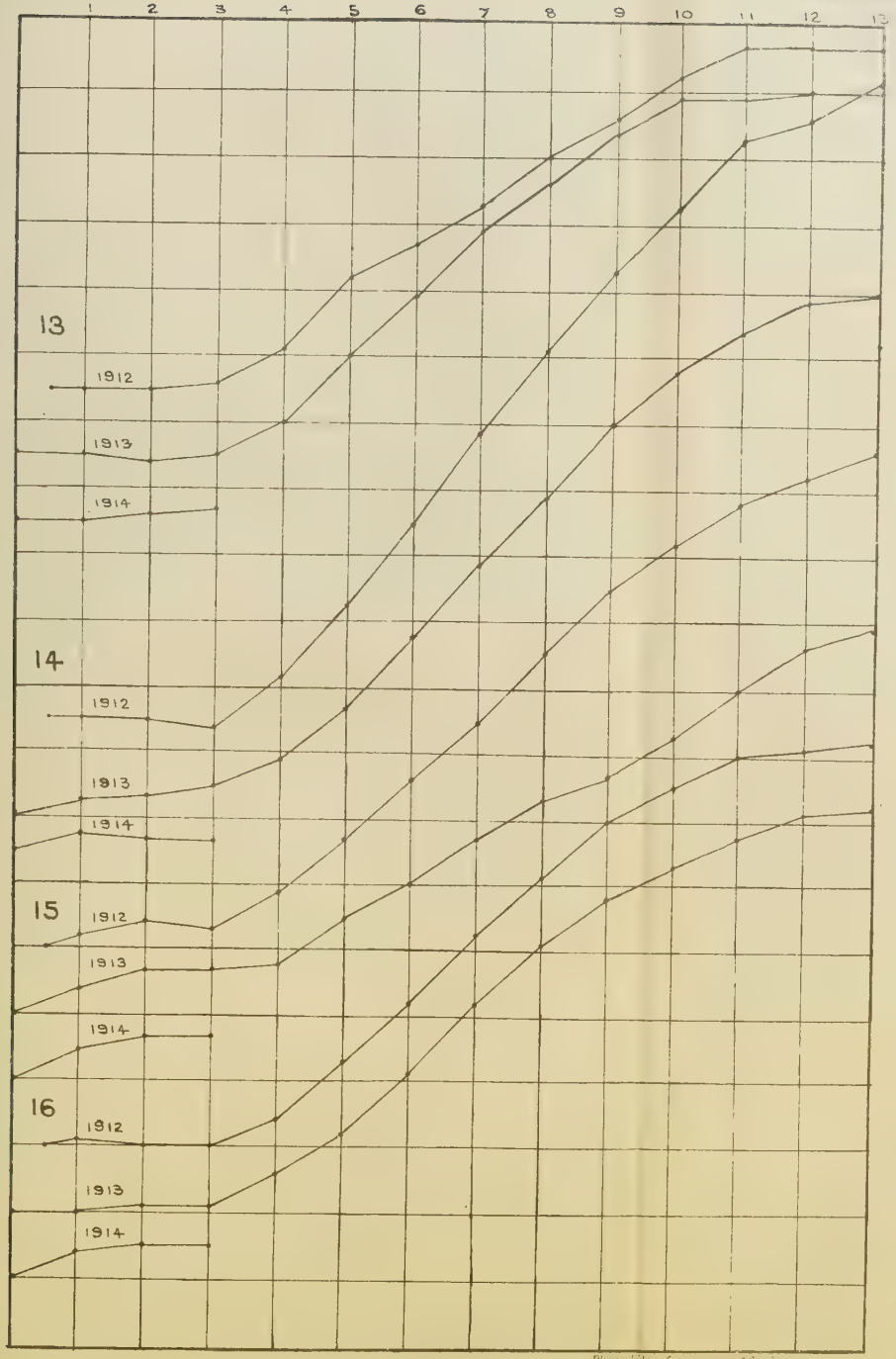

Photo-Litho Survey Dept. Ceylon 5.8.16.

Plate XII.

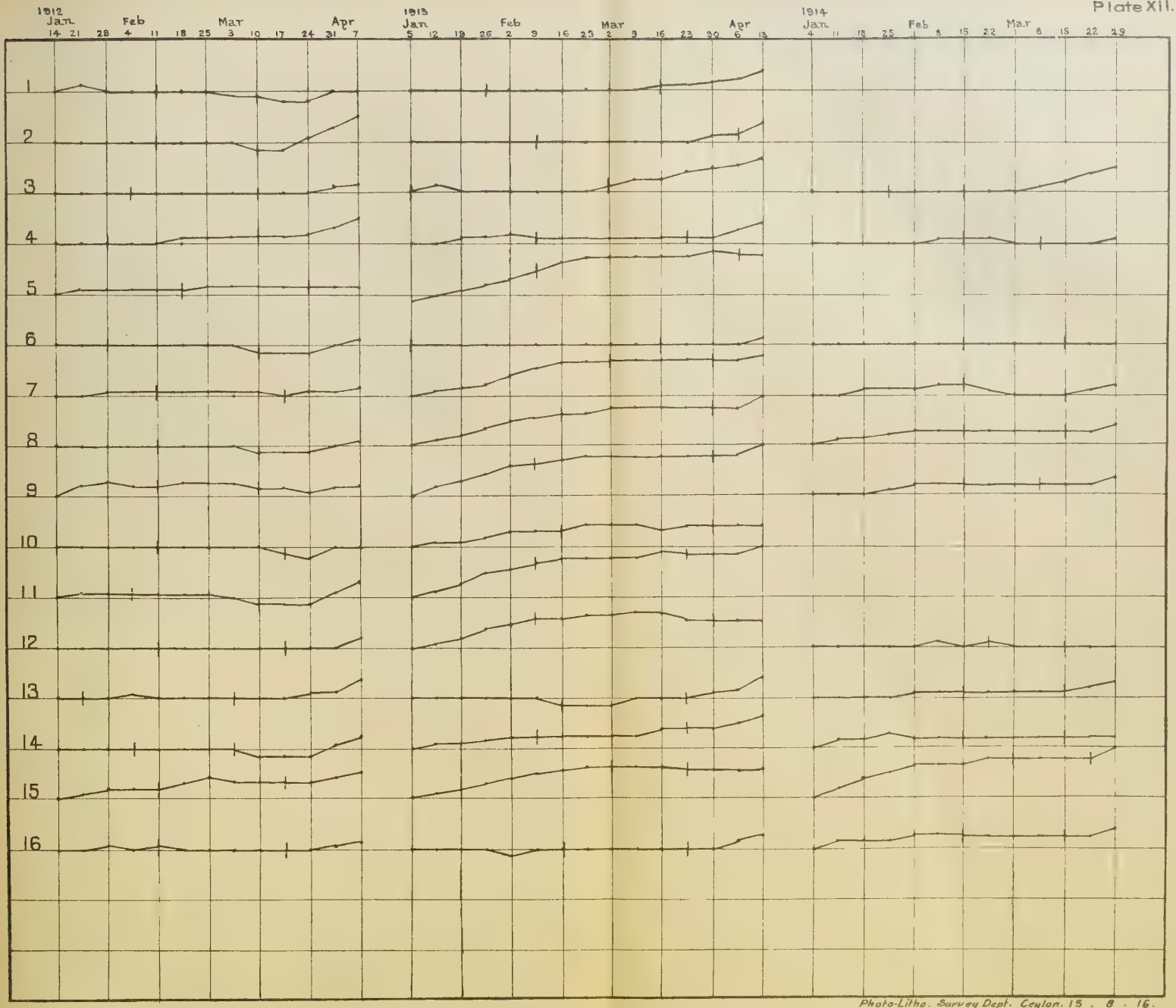

Photo-Litho. Survey Dept. Ceylon. 15 . 8 . 16.

A Preliminary List of Ceylon Polypori.

BY

T. PETCH, B.A., B.Sc.

THE earliest record discovered, up to the present, of any Ceylon Polyporoid is contained in Houttuyn, Handleiding tot de Plant-en Kruidkunde, &c., published at Amsterdam in 1783. In that work two Ceylon fungi, obtained by the author from Herr Chr. P. Meijer, are described, under the names of *Peziza Ceylonsche* and *Peziza limbosa*, with figures. From the description *Peziza Ceylonsche* was probably *Polystictus xanthopus*, but the figure is that of a *Lentinus ; Peziza limbosa* may have been *Trametes ochroleuca*.

It might have been expected that the numerous botanists who collected in Ceylon from the time of Hermann would have gathered some of the larger fungi, but no record of their having done so has been found, except in the case of König (1777–1781). König's specimens remained in the British Museum unnamed until 1842, when Berkeley described them in "Notices of Fungi in the Herbarium of the British Museum," Ann. Nat. Hist., X., pp. 369–384. The Polyporoids recorded for Ceylon in that paper are :—

Polyporus agariceus.
P. xanthopus.
P. crenatus.
P. Kœnigii.
P. dubius.
P. zonalis.
P. zeylanicus.
P. nigrocinctus.
Trametes læticolor.
Dædalea inæquabilis.
Hexagonia Kœnigii.

Trametes lactinea, described without locality, was probably also from Ceylon. König's specimens are still in the Herbarium of the Natural History Museum (South Kensington).

In 1844 Léveillé, in " Champignons Exotiques," Ann. Sci. Nat., Ser. 3, II., pp. 167–221, also recorded *P. crenatus* and *Favolus agariceus* for Ceylon ; and in 1846, in " Descriptions des Champignons de l'herbier du Museum de Paris," Ann. Sci. Nat., Ser. 3, V., pp. 111–167, he described *Polyporus sericellus* and *P. phæus* from Ceylon.

About 1846 Gardner forwarded to Berkeley a consignment of 135 gatherings of fungi, which were recorded in Decades of Fungi, XV.–XIX., Hook. Lond. Jour. Bot., VI., pp. 479–514. Forty-three of these were Polyporoids. Thwaites, on succeeding Gardner in 1849, continued sending fungi to Berkeley, and several records of Ceylon species are to be found in the lists published by the latter up to 1871, in which year Berkeley and Broome began the publication of " The Fungi of Ceylon " in the Journal of the Linnean Society.

This memoir was based on a large consignment from Thwaites, which has provided the bulk of the Ceylon fungi now found in European herbaria. The section dealing with the Polyporoids, over one hundred species, was published in 1873.

In 1879 Cesati published an account of the fungi collected in Ceylon and Borneo by Beccari, and enumerated ten Polyporoids from this country. After this active period of the seventies work ceased, and except for a few odd specimens collected at random, and the christening of species which Berkeley left unnamed, no further additions were made to our knowledge of Ceylon Polyporoids until the present century. Professor F. von Höhnel visited Ceylon in 1907, and the Polyporoids collected by him, about fifteen, were enumerated by Bresadola in " Polyporaceæ Javanicæ," Ann. Myc., X. (1912), pp. 492–508. Three of von Höhnel's species had not been previously recorded for Ceylon.

The present paper includes (1) a list of all the species previously recorded from Ceylon, with notes on the specimens where these are available ; and (2) a list of the species which have been collected in Ceylon up to the present time. In the compilation of both of these lists I have been greatly indebted to Mr. C. G. Lloyd, both for the ever ready assistance afforded in numerous letters, and for the critical information contained in his published writings.

It has been my aim in the final list to enumerate the different species under some name recognizable by mycologists in general. If a given species is found as Polystictus or Polyporus or Trametes, it is placed there, as a rule, because that name has been previously employed for it, not because of any views of mine on the limits of the genera in question. That the name given is the earliest, or the one which will finally be adopted is not claimed.

Berkeley and Broome's list of Polyporoids in the Fungi of Ceylon has been taken as the basis of the following list of previous records, their names and numbers being quoted verbatim for each species; other records are interpolated without numbers :—

PREVIOUS RECORDS.

431. **Lenzites applanata** Fr.
Specimen, Ceylon, 1851, in Herb. Kew is *Hexagonia ochroleuca;* specimen, "Ceylon, 4–5,000 feet, G. H. K. T." also in Herb. Kew is *Lenzites Palisoti* (*repanda*).

432. **Lenzites deplanata** Fr. (224).
Thwaites 224 in Herb. Kew is *Lenzites Palisoti* (*repanda*).

433. **Lenzites repanda** Fr. (962 ; Gardner 68, 120).
Thwaites 962, Gardner 68 and 120, and Thwaites of 1850 unnumbered are *L. Palisoti* (*repanda*).

434. **Lenzites aspera** Kl., Linn. 1833, p. 480 ; (Gardner 83).
Gardner 83 is in Herb. Kew.

436. **Polyporus arcularius** Fr. (177). On dead wood. Talagalla, &c., Gardner.
Specimens in Herb. Kew are Gardner 21 and Thwaites 177. König's Ceylon specimens were named *Polyporus agariceus* by Berkeley. Part of Thwaites 177 is in Herb. Peradeniya. Ceylon examples assigned to this species are subcartilaginous when fresh, and usually become horny when dry. Though it appears to be generally agreed that the tropical examples are identical with the European species, acquaintance with these in the fresh state makes this rather doubtful. Ceylon examples, especially from the low-country, would

appear to agree better with *Favolus* than with *Polyporus*. This is probably the species collected by Beccari at Peradeniya, and recorded by Cesati as "*Favolus cillario* Mntg."

437. **Polyporus olivaceo-fuscus** B. & Br. (826).

Part of Thwaites 826 is in Herb. Kew, and the remainder in Herb. Peradeniya, sections of the same single specimen. This is apparently an immature example of *Boletus portentosus* B. & Br. (see Ann. Peradeniya, IV., p. 58).

438. **Polyporus oblectans** Berk. (Gardner 60, cum icone).

Gardner 60 is in Herb. Kew. *Fide* Lloyd, the Ceylon examples are nearer *cinnamomeus* than *oblectans*.

439. **Polyporus rugosus** Nees (728, cum icone ; Gardner 57).

Gardner 57 in Herb. Kew contains young specimens Thwaites 728 in Herb. Peradeniya contains three examples ; the remainder in Herb. Kew is *Polyporus rugosus*, except for one specimen. The latter is thicker than usual, with a superior lateral attachment, but the stalk is wanting ; it resembles some forms of *Fomes lucidus*, but the specimen was not cut to confirm this surmise. Berkeley and Broome's note, "Pileus when fresh somewhat brick-coloured," is incorrect ; the immature pileus becomes red when cut or bruised.

440. **Polyporus xanthopus** Fr. (377 in part).

Herb. Kew contains six specimens from Gardner, one from Thwaites, 1850, and others, Thwaites 377. Herb. Peradeniya contains part of Thwaites 377. This species was recorded for Ceylon by Berkeley from König's collection.

441. **Polyporus hemicapnodes** B. & Br. (600).

Herb. Peradeniya contains eight examples of Thwaites 600. In Herb. Kew are Thwaites 600, May, 1868, and another sheet marked Thwaites 600, March, 1869. The latter appears to be a different species, but the specimens are too much insect-eaten to determine. The type in Herb. Kew is marked by Bresadola

"Tantum forma gracilior *Polypori melanopodis* Sw." It was collected at Peradeniya by von Höhnel, and recorded by Bresadola (*loc. cit.*).

442. **Polyporus picipes** Fr. (403).

Herb. Peradeniya contains part of one specimen of Thwaites 403 in sections, and much damaged by insects Herb. Kew contains part of the same Thwaites' collection. One specimen in Herb. Kew, marked "*Pol. picipes* Fr. *var.*, Ceylon, Gardner," appears to be a young *P. rugosus*. The other specimens are *P. dictyopus* Mont.

443. **Polyporus sanguineus** Fr. (381 ; Gardner 111).

Herb. Peradeniya contains four specimens of Thwaites 381, thin, attached along one edge or by a definite disc. In Herb. Kew, *sub Polystictus sanguineus* are a Ceylon specimen, *ex* Herb. Hooker, labelled *P. cinnabarinus* by Berkeley, with the name changed by Berkeley (in pencil) to *P. sanguineus ;* six other Ceylon specimens, two of them white, collected by Thwaites in 1850 ; another collected by Thwaites in 1851 ; and a specimen from Thwaites 381.

In Hooker's London Journal of Botany, VI., pp. 479–514, Berkeley recorded, for Ceylon, *P. sanguineus* Fr., Gardner 111, and *P. cinnabarinus* Fr., Gardner, without number. The latter was not enumerated in Fungi of Ceylon, Jour. Linn. Soc., XIV., pp. 1–140. Under *P. cinnabarinus*, in Herb. Kew, are a specimen from Ceylon without number or collector's name, and another "Talagalla, Ceylon, Gardner," neither of which differ from the specimen with name changed *sub P. sanguineus ;* and another marked *P. cinnabarinus*, Ceylon 111. The last-mentioned is a thin specimen, and was published as *P. sanguineus* in the 1847 list.

All the specimens from Ceylon are the same species, viz., *P. sanguineus*. It would seem possible that specimens recorded from the tropics as *Trametes cinnabarina* are merely thicker examples of *P. sanguineus*. *Trametes* forms of the latter, growing on the

under surface of a log or in a crack in the wood, frequently occur with the normal thin form.

444. **Polyporus flabelliformis** Kl. (377 in part).

Herb. Kew contains one specimen, Gardner ; three specimens, Thwaites 377 ; two specimens, collected by Thwaites in 1850 ; and nine Thwaites' specimens, without number.

445. **Polyporus discipes** Berk.

The type specimen collected by Gardner, Talagalla, Ceylon, is in Herb. Kew. There is only one example. It resembles the Ceylon specimen of *P. Emerici*, but has a brighter yellow-brown context.

446. **Polyporus Menziezii** Berk.

Herb. Kew contains five Ceylon specimens, Thwaites, without collection number. Though the name was published in the " Fungi of Ceylon," it would appear that Berkeley regarded the Sumatran specimen as the type. The Ceylon specimens are *Polyporus Didrichsenii* according to Lloyd, but they seem to me to be *Polyporus Gaudichaudii*.

447. **Polyporus rhipidius** Berk. (1 and 363).

Herb. Peradeniya contains numerous specimens from Thwaites 363. Herb. Kew contains Thwaites' specimens unnumbered ; Thwaites 1, December, 1854 ; and Thwaites 363.

448. **Polyporus dilatatus** Berk. (599).

In Herb. Peradeniya are seven specimens of Thwaites 599. Herb. Kew contains the type specimens from Gardner, without number or locality ; eleven specimens, Thwaites 599 ; and part of the latter collection *ex* Herb. Cooke. The name was changed by Cooke to *Polystictus Adami* (Proc. Bot. Soc., Edinburgh, XIII., p. 171), because of the previous *Polyporus dilatatus* Lév. The Thwaites' collection in Herb. Kew is marked *P. lacer* Jungh. by Bresadola.

Cooke's change of name might have had a curious result. The type of *Polystictus Adami* Cooke is the

part of Thwaites' gathering in Herb. Cooke. But the type of *P. dilatatus* was not Thwaites' gathering, but Gardner's. Fortunately the two collections are the same species. Cooke wrote "*Polystictus Adami* Berk," but there is apparently no evidence that the name was authorized by Berkeley. *Fide* Lloyd, the Ceylon specimens are *Polyporus obovatus* Jungh.

449. **Polyporus russiceps** B. & Br. (961, cum icone).

Three specimens in Herb. Peradeniya ; six specimens in Herb. Kew. In the same cover in Herb. Kew are two specimens of *P. grammocephalus*, marked "34 or 261." *Polyporus russiceps* is distinct from *P. grammocephalus* (see Patouillard, Bull. Soc. Myc. France, XXX., pp. 36–40). *Polyporus grammocephalus* was recorded for Ceylon from Gardner's collection, but not from Thwaites'. In Herb. Peradeniya are three specimens of *grammocephalus*, marked "? 261 ? 34," while in Herb. Kew are specimens, Gardner 118, Gardner 24, and Thwaites "34 or 261." *P. grammocephalus* was collected at Peradeniya by von Höhnel, and recorded by Bresadola (*loc. cit.*).

450. **Polyporus sulfureus** Fr. (601).

A large specimen in Herb. Kew (Thwaites 601), and a smaller piece of the same in Herb. Peradeniya. This appears to be identical with the Gardner specimen "referred doubtfully to *lacteus*" by Berkeley in 1847, and the species named *Polyporus appendiculatus* B. & Br. in 1873.

451. **Polyporus eurocephalus** B. &. Br. (969).

Parts of Thwaites 969 are in Herb. Kew and Herb. Peradeniya. According to the present determination, on comparison with fresh specimens, this is a *Merulius* (see Ann. Peradeniya, IV., p. 408).

452. **Polyporus lacteus** Fr.

Gardner's specimen, referred doubtfully to *lacteus* by Berkeley, is in Herb. Kew. It appears to be the same as the species referred by Berkeley and Broome to *P. sulfureus*.

453. **Polyporus appendiculatus** B. &. Br.

Thwaites' specimen at Kew consists of fragments only ; it appears identical with the Ceylon species assigned to *P. sulphureus* and *P. lacteus*.

454. **Polyporus dissitus** B. & Br. (966).

Part of Thwaites 966 is in Herb. Kew, and the remainder in Herb. Peradeniya. In each case the specimen is almost entirely resupinate with a slightly reflexed margin. Bresadola has appended to the Kew specimen the following note :—" Forma resupinata juvenilis *Polypori adusti* Fr. Structura quoque identica." The fresh specimens, however, do not resemble *Polyporus adustus*. This species is, in my opinion, identical with *Polyporus secernibilis* Berk., but not with the Ceylon specimens assigned by Lloyd to *P. secernibilis*.

455. **Polyporus polytropus** B. & Br. (604).

Two specimens from Thwaites 604 are in Herb. Peradeniya, and the remainder in Herb. Kew, part under *P. polytropus* and part under *P. bicolor* Jungh. All the specimens are the same species. A note by Bresadola on the type specimen in Herb. Kew reads " *P. polytropus* B. & Br. = *P. pruinatus* K., 1833 = *P. anisopilus* Lév., 1843 = *P. anebus* Berk., 1847."

456. **Polyporus kermes** (970).

The type in Herb. Kew contains three specimens without any Thwaites' number. The specimen returned to Ceylon under Thwaites 970 is not *P. kermes*, but *Fomes dochmius*. In the type specimen of *P. kermes* the upper surface is hard and concentrically zoned. Specimens recently collected in Ceylon are soft and spongy when fresh, almost completely resupinate, with a narrow free margin ; but when dry the fungus contracts and the upper surface becomes hard. Judged by these recent specimens the apparently free upper surface of the type specimens was, when growing, closely applied to the substratum. *P. kermes*, from the fresh specimens, is a Polyporus, not a Fomes. To

the type in Herb. Kew Bresadola has appended the synonymy, "*P. kermes* B. = *P. albomarginatus* Lév., 1844 = *P. kermes* B., 1875 = *P. læticolor* B., 1878 = *P. pyrrocreas* Cke., 1855." The last-named species, however, is not the same as *P. kermes*.

457. **Polyporus rubidus** Berk. (Gardner 96).

The type in Herb. Kew is Gardner 96. There are also numerous unnumbered Ceylon specimens from Thwaites. The species recorded by Cesati as *P. bubidus* is evidently an error for *rubidus*.

458. **Polyporus zonalis** Berk.

In Herb. Kew are Gardner 69 and part of Thwaites 605. The former is marked "type," but this species was described by Berkeley in 1842, and the type should be in the British Museum. Thwaites 605, *sub P. zonalis* in Herb. Kew, contains two specimens of *P. zonalis* and two specimens, marked by Berkeley, *P. cartilagineus*. Berkeley and Broome's reference to Thwaites 608 in Jour. Linn. Soc., XIV., p. 49, is probably an error for 605.

459. **Polyporus cartilagineus** B. & Br. (605 in part).

Thwaites 605 was apparently a mixture of several species. In the type of *P. cartilagineus* in Herb. Kew are three specimens, one of which is *Polyporus durus* Jungh., while the other two are the species described by Berkeley and Broome as *P. cartilagineus*. And, as noted above, in the cover *P. zonalis* at Kew there are two other specimens, agreeing with those already referred to, marked *P. cartilagineus* by Berkeley. A note by Bresadola states that *P. cartilagineus* = *P. durus* Jungh., but this determination only applies to one example in the type, and it obviously does not apply to the species described by Berkeley and Broome.

Part of Thwaites 605 was described by Berkeley and Broome as *P. epilinteus*. In the type of this in Herb. Kew there are three specimens, one of which is young *P. kermes*, while the other two are marked by Bresadola "*P. zonalis resupinatus*." In the same cover are part of

Thwaites 605 *ex* Herb. Currey and Herb. Cooke ; these are chiefly resupinate, but show a marginal dimidiate portion. These latter are identical with the part marked " *P. zonalis* resupinate " by Bresadola, and with the specimens of *P. cartilagineus, sub P. zonalis* and *P. cartilagineus.*

Another part of Thwaites 605 is included in Herb. Kew under *P. dochmius.* It contains a resupinate piece, matching Bresadola's " *P. zonalis* resupinate " *sub P. epilinteus ;* and a specimen said to be young *P. dochmius.* The latter resembles *P. dochmius* to some extent, but is thinner, and appears to have been somewhat cartilaginous. I have not seen young *P. dochmius* in this form. This part of Thwaites 605 originally contained *P. siennæcolor* also, but the specimen of the latter was removed by Cooke to another cover.

The part of Thwaites 605 in Herb. Peradeniya contains one specimen of *Polyporus durus,* three specimens of the form assigned to immature *P. dochmius,* and one specimen of " *P. zonalis* resupinate."

Thwaites 605 therefore consisted of—

(1) *Polyporus durus.*
(2) *Polyporus zonalis.*
(3) A species assumed to be young *F. dochmius.*
(4) A species named *P. cartilagineus* in its dimidiate form, and *P. epilinteus* in its resupinate form.
(5) *P. siennæcolor.*

The determination of (3) as *F. dochmius* appears doubtful ; no form matching this has been collected recently. According to Bresadola's determination, (4) is *Polyporus zonalis ;* petaloid forms of *P. zonalis* are not uncommon, though not so markedly pseudostalked as in *P. cartilagineus.* But Bresadola's determination of *P. epilinteus,* as resupinate *zonalis,* appears to be correct, and hence *P. cartilagineus* is *P. zonalis.*

460. **Polyporus australis** Fr. (379, 380 ; Gardner 75).

Gardner 75 and Thwaites 380 in Herb. Kew are *Fomes australis.* Thwaites 379 in Herb. Peradeniya is

the same species. Thwaites 380 in Herb. Peradeniya appears to be a dark specimen of *Fomes lucidus*.

461. **Polyporus igniarius** Fr. var. **applanatus** (Gardner 110).
Gardner 110 in Herb. Kew is young *Fomes australis*. Thwaites 380 in Herb. Peradeniya, labelled *P. igniarius*, is *Fomes subresinosus ;* it is listed in " Fungi of Ceylon " as *Fomes australis*.

462. **Polyporus fulvus** Fr. (367).
Thwaites 367, *sub P. fulvus* in Herb. Kew is *Polyporus hydnophorus* B. & Br. Beccari collected a Polyporus on Pedrotalagala which Cesati identified as *P. fulvus, juvenilis*.

463. **Polyporus senex** Mont. (565).
Two specimens of Thwaites 565, *sub P. scruposus* at Kew, are *P. gilvus*. Another specimen, same number and locality, *sub P. senex* in Herb. Kew, but labelled " *P. senex P. scruposus var.*," is *P. senex* Mont. *P. substygius* Cooke was also part of Thwaites 565. In Herb. Peradeniya Thwaites 565 is *P. gilvus*. Thwaites 565* is *P. gilvus* and *P. substygius* Cooke, and 565** is *P. Emerici* Berk.

464. **Polyporus licnoides** Mont. (261).
Specimen in Herb. Kew is Thwaites 211 (not 261). It has no setæ, and is *P. Emerici* Berk.

465. **Polyporus isidioides** Berk.
Specimen from Ceylon in Herb. Kew, without collection number, is *P. gilvus* (*P. scruposus*).

466. **Polyporus holosclerus** Berk.
In Herb. Kew Thwaites' specimen, without number, is *P. gilvus*. A specimen from Gardner, without number, is also *P. gilvus*, and the same is true of Ceylon specimens *ex* Herb. Cooke, Currey, and Hooker.

467. **Polyporus ferreus** Berk. (Thwaites 397 in part ; Gardner 104, 106).
Herb. Kew contains numerous specimens of Gardner 104 and 106. Another Ceylon specimen, *sub P. ferreus* is *P. dochmius*. A note by Bresadola in Herb. Kew

reads " *P. nubilus* Fr. = *P. ferreus* Berk., 1847 = *P. dochmius*, 1873." *P. dochmius*, however, is distinct from *P. ferreus*.

468. **Polyporus anebus** Berk.

Herb. Kew contains eight Ceylon specimens, probably all collected by Gardner. (See also *P. polytropus*.)

469. **Polyporus dochmius** B. & Br.

Type in Herb. Kew is Thwaites 970. In the same cover is part of Thwaites 605, already noted under *P. cartilagineus*.

470. **Polyporus Persoonii** Fr. (224).

Herb. Kew contains an abundance of Ceylon material, chiefly resupinate, viz., specimens from Gardner, Thwaites 224, and Ceylon specimens *ex* Herb. Hooker. A Ceylon specimen *ex* Herb. Currey is *P. bicolor*. Thwaites 224 is represented in Herb. Peradeniya.

471. **Polyporus caperatus** Berk. (210).

Thwaites 210 was divided into *P. caperatus* and *P. phocinus* B. & Br. The specimens in Herb. Kew and Herb. Peradeniya are all the same species, a thin form of *P. caperatus*. In addition to Thwaites 210, there is another specimen in the cover of *P. caperatus* in Herb. Kew (Thwaites, without number), which is probably not that species.

472. **Polyporus cichoraceus** Berk.

The specimen in Herb. Kew, collected by Thwaites in 1854, is the same species as that named *P. setiporus* B.

473. **Polyporus setiporus** Berk. (375).

Herb. Kew contains the type specimens from Ceylon collected by Gardner, and others collected by Thwaites in 1851. Thwaites 375 is in Herb. Kew and Herb. Peradeniya.

474. **Polyporus strigatus** Berk.

Specimens, Gardner 123, are in Herb. Kew.

475. **Polyporus vittatus** Berk.

The type " Gardner, Talagalla, Ceylon," is in Herb. Kew.

476. **Polyporus albo-cervinus** Berk.

Ceylon specimens in Herb. Kew are *P. bicolor* Jungh.

477. **Polyporus venustus** Berk. (530).

Thwaites 530 in Herb. Kew and Herb. Peradeniya is *Trametes versatilis*.

478. **Polystictus Peradeniæ** B. & Br. (221).

Type, Thwaites 221, is in Herb. Kew. This is said to be identical with *Polyporus cervinogilvus* Jungh. and *Trametes dermatodes* Lév. A number of specimens distributed from the Philippines as *P. cervinogilvus* Jungh. are *Irpex flavus* Jungh.

479. **Polystictus personatus** B. & Br. (133, 535).

133 and 535 are on the same sheet in Herb. Kew. The sheet is stained greenish, as is also the sheet of *P. Peradeniæ*.

480. **Polyporus hirsutus** Fr. (378, 564).

Thwaites 378 and 564 in Herb. Kew are *Polyporus hirsutus* (*P. occidentalis*). 564 in Herb. Peradeniya is the same. Recorded by Cesati, from Nuwara Eliya, collected by Beccari.

481. **Polyporus versicolor** Fr. (374, 563, 965, 1123).

In Herb. Kew are Gardner 100, Thwaites, collected 1851, Thwaites 374 (some marked *versicolor var.*), Thwaites 563, 965, and 1123. Thwaites 1123 appears to be resupinate *P. Persoonii* (in part), while 965 is *Gaudichaudii*. Ceylon specimens are usually thinner than European forms, and cream-coloured below. I have distributed them as *P. pictilis* Berk., but they are not so closely zoned as the type of that species. In Herb. Peradeniya 1123 is *P. hirsutus*, 965 is *P. Gaudichaudii*, and 374 is *P. versicolor*.

482. **Polyporus elongatus** Berk. (373).

Specimens in Herb. Kew from Gardner (without number), Gardner 101, and Gardner (Horton Plains); from Thwaites, collected 1850 and 1854, and Thwaites 373.

483. **Polyporus secernibilis** Berk.

The type in Herb. Kew contains two specimens from Gardner. This appears to be identical with *P. dissitus* B. & Br. The species assigned by Lloyd to *P. secernibilis* is, to me, different. Ceylon specimens of the latter are included among the unnamed species in Herb. Kew, without name or number, *ex* Herb. Hooker, and also (?) in the cover of *Polyporus radiatus*, " Ceylon, Golagama, February, 46."

484. **Polystictus phocinus** B. & Br. (210).

Thwaites 210, *sub P. phocinus* in Herb. Kew and Herb. Peradeniya are thin specimens of *P. caperatus*.

485. **Polyporus Thwaitesii** Berk.

Herb. Kew contains the type specimens, collected Thwaites, 1850, and also *P. Thwaitesii var.* The specimens are *P. Gaudichaudii*.

486. **Polyporus obliquus** Fr. (213).

Two pieces in Herb. Kew and five in Herb. Peradeniya Those in Herb. Peradeniya include two species, one with and one without setæ. The setæ have inflated bases and resemble those of *Fomes setulosus* Lloyd. This part of Thwaites 213 is probably resupinate *Fomes setulosus*.

487. **Polyporus acupunctatus** B. & Br. (651).

Thwaites 651 in Herb. Kew includes four pieces ; there is also a piece *ex* Herb. Currey, and another *ex* Herb. Cooke, both originally parts of Thwaites 651. The sheet is marked by Bresadola. " On trouve dans cette collection trois especes bien distinctes, mais steriles, savoir (*a*) une espece, (*b*) une autre espece, (*c–d*) une autre espece avec l'hymenium de meme structure du genre *Ganoderma*." The piece from Herb. Cooke is (*b*) ; that from Herb. Currey is (*d*). In Herb. Peradeniya are eight pieces ; five of these are Bresadola's (*a*), and the other three Bresadola's (*d*). (*a*) is resupinate *Fomes setulosus*. The description appears to refer chiefly to (*d*), though the thickness, one-third of an inch, is taken from (*a*).

488. **Polyporus contiguus** Fr. (389, 653).

Herb. Kew contains both Thwaites 389 and 653, probably two different species. In Herb. Peradeniya is a sheet marked *P. contiguus*, but bearing the Thwaites' numbers 209, 653, the former of which should be *P. epimiltinus ;* it contains two pieces of 653, and eleven pieces of *P. epimiltinus*. 653 has shallow pores, which are lined with brown tapering setæ up to 64 μ long ; 389 has no setæ, but the edges of its pores bear numerous processes composed of fascicles of hyphæ. 653 appears to differ from *P. contigua* Fr. in its shallower pores, which are 0·2-0·3 mm. diameter and up to 0·4 mm. deep.

489. **Polyporus variolosus** B. & Br. (650).

Specimens in Herb. Kew and Herb. Peradeniya.

490. **Polyporus melleus** B. & Br. (535 in part).

In Herb. Kew, the type is marked "133 and 535, February, 1869." The corresponding sheet in Herb. Peradeniya does not contain this species.

491. **Polyporus diversiporus** B. & Br. (535 in part).

The type in Herb. Kew contains two species, *P. diversiporus* and *P. Peradeniæ* (or *P. personatus* ?). In Herb. Peradeniya is a sheet marked "133, 535, 650," which bears two pieces of *P. diversiporus*, two of *P. variolosus*, and one of *P. personatus*.

492. **Polyporus niger** Berk. *var poris minoribus* (261).

Poria niger B., var β., Thwaites, Ceylon, 1854, is *Polyporus vinosus* Berk., in Herb. Kew. Three pieces (Thwaites 261) *sub P. niger* in Herb. Kew are *P. Ravenalæ*.

493. **Polyporus Ravenalæ** B. & Br. (261).

In Herb. Kew, Thwaites 261 is marked "*Polyporus niger var.* γ : on petioles of *Ravenala*." It is on a palm, not on *Ravenala*. All the specimens of Thwaites 261 are marked *P. niger* by Berkeley, but Cooke's Ceylon specimens (*ex* Herb. Berkeley) are labelled *P. Ravenalæ*. This species was collected by von Höhnel at Peradeniya, and recorded by Bresadola.

494. **Polyporus fuligo** B. &. Br. (967).

Type, Thwaites 967, in Herb. Kew, is marked "*cf.* with 261." It is on a palm, like *P. Ravenalæ*, but has much smaller pores, and tends to break up in drying. It is apparently only a small-pored form of *P. Ravenalæ*,—pores 50–80 μ diameter, instead of 100–200 μ as in the common form. Collected by von Höhnel at Peradeniya, and recorded by Bresadola (*loc. cit.*).

495. **Polyporus aneirinus** Fr. (371).

The Ceylon specimen, Thwaites 371, in Herb. Kew, is quite unidentifiable. It consists of five small patches, chiefly earth and sand, glued on paper.

496. **Polyporus Vaillantii** Fr. (161).

Thwaites 161 is represented in Herb. Kew and Herb. Peradeniya. The Ceylon specimens have the habit of the European species, but have pores up to 3 mm. long and 0·1–0·2 mm. diameter, developed over nearly the whole surfare ; no cords of mycelium are evident, except those spreading from the margin of a patch. It is most probably not identical with the European species. As noted by Thwaites, it grows on the ground or on very rotten wood.

497. **Polyporus vaporarius** Fr. (367, 369).

498. **Polyporus vulgaris** Fr. (367, 369 in part).

Thwaites 367 and 369 provided *P. vaporarius* Fr., *P. vulgaris* Fr., *P. hydnophorus* B. &. Br., and *P. fulvus* Fr. As is usual in such cases in Herb. Berkeley, the various species were not completely separated, especially in the duplicates, nor were the different Thwaites' numbers kept distinct. The specimens included under *P. fulvus* Fr. at Kew are identical with those under *P. hydnophorus* B. & Br. ; this is a good species.

Under *P. vaporarius*, in Herb. Kew, are Thwaites 133, and one piece marked 367, 369 ; there is also another piece, unnumbered, and a packet of duplicates. Under *P. vulgaris*, in Herb. Kew, are Thwaites 367, 369 mixed, and Thwaites 369 separate. The "*vaporarius*"

duplicates, already referred to, are identical with one specimen on the sheet of *P. vulgaris*, Thwaites 369.

In Herb. Peradeniya is a sheet marked "367 and 369," which bears sixteen pieces; nine of these are *P. hydnophorus*, four are "*P. vulgaris*," and three are "*P. vaporarius*." Another sheet marked "367, 369" bears three pieces of "*P. vulgaris*."

Neither of these names appears to be correctly applied. The species assigned to *P. vulgaris* is identical with that named *P. interruptus* B. & Br., the latter being, in Herb. Kew, a younger stage; it is a pinkish-white species, with rigid, thin dissepiments (when fresh). The species assigned to *P. vaporarius* is white, but stout, with pores up to 5 mm. deep, and thick, rather soft dissepiments (when fresh).

499. **Polyporus callosus** Fr. (370).

In Herb. Kew, Thwaites 370 consists of four pieces on one sheet, and a single piece on another sheet which seems different; there is also a piece marked 367, *P. callosus*.

In Herb. Peradeniya the sheet marked 370 bears five pieces, probably all *P. callosus*, and two pieces of another species. Another sheet marked 968, which should be *Trametes versiformis*, bears three pieces of *P. callosus*, and one of *P. niphodes*.

Probably not *P. callosus*, but I have not met with it, and do not know it in the fresh state. It is thin, with extensive glabrous patches on which the pores are barely developed.

500. **Polyporus vinctus** Berk. (208).

Thwaites 208 in Herb. Kew is identical with the species which we have for some years been naming *Poria hypolateritia* in Ceylon. It is, I believe, identical with the type specimen of *Poria hypolateritia* Berk. from the Nilgiris, the latter being young and poorly developed. Thwaites 208 in Herb. Peradeniya is a different species; it resembles *P. hypolateritia* superficially, but the basal layer is brown.

501. **Polyporus subvinctus** B. & Br. (603).

Thwaites 603 in Herb. Kew is a thick species, up to 4 mm. thick, with a broad sterile margin ; the co-type, Thwaites 603, in Herb. Peradeniya is the same species, but much thinner. Another sheet at Kew is marked " with 208 " ; this collection is also represented in Herb. Peradeniya.

502. **Polyporus epimiltinus** B. & Br. (209).

Thwaites 209 is in Herb. Kew and Herb. Peradeniya ; in the latter case a mixture. Specimens distributed from the Philippines as *Poria borbonica* Pat. appear to be the same species.

503. **Polyporus Stephensii** B. & Br. (971).

Trametes serpens Fr., *fide* Saccardo. Thwaites 971 is in Herb. Kew, together with specimens from all parts of the tropics under the same name.

504. **Polyporus hydnophorus** B. & Br. (367, 369 in part).

The type in Herb. Kew is poor ; better specimens will be found under *Fomes fulvus*. Well represented in Herb. Peradeniya.

505. **Polyporus leptodermus** B. & Br. (1033).

Thwaites 1033 is in Herb. Kew and Herb. Peradeniya.

506. **Polyporus calceus** B. & Br. (598).

Polyporus calcicolor (B. & Br.) Sacc. & Syd., Sylloge Fungorum, XIV., p. 192. Thwaites 598 is in Herb. Kew and Herb. Peradeniya.

507. **Polyporus niphodes** B. & Br. (652).

In Herb. Kew two sheets, Thwaites 652, marked *P. niphodes* by Berkeley, are all the same species ; another sheet, marked 652, contains four pieces, two of which are *niphodes*, and two marked by Bresadola " not *niphodes*." The two latter may be *P. interrupta*.

In Herb. Peradeniya Thwaites 652 is a mixture, containing three pieces of *P. niphodes*.

Both in Herb. Kew and Herb. Peradeniya are other specimens of *P. niphodes*, or an allied species, *sub Trametes versiformis* (Thwaites 968).

508. **Polyporus interruptus** B. & Br. (652 in part).

Thwaites 652 is in Herb. Kew and Herb. Peradeniya. The specimens appear to me to be the same as those assigned to *P. vulgaris*.

509. **Polyporus epilinteus** B. & Br. (605).

Thwaites 605 in Herb. Kew, *sub P. epilinteus*, includes three pieces on one sheet, *ex* Herb. Berkeley, two marked by Bresadola, *P. zonalis* B. *resupinatus*, and the other, *P. albomarginatus* Lév., *f. resupinatus*. Specimens (Thwaites 605) *ex* Herb. Currey and Herb. Cooke are the same as the first of these, and show a resupinate margin. With the exception of the piece labelled *P. albomarginatus*, which is young *P. kermes*, all are *P. cartilagineus* B. & Br., *i.e.*, *P. zonalis* Berk. *Poria epilintea* is recorded for Peradeniya by Bresadola (*loc. cit.*) from von Höhnel's collection.

— **Polyporus contractus** Berk.

Named from Gardner's collection, Decades of Fungi, 176. The type is either *Polyporus zonalis* or *Fomes lignosus*.

— **Peziza Ceylonsche.**

From the figure this was a *Lentinus*, but the description is that of a *Polyporus*, probably *P. xanthopus*.

— **Peziza limbosa.**

The description and figure indicate a Polyporoid fungus, probably *Hexagonia ochroleuca*. The pores shown in the figure are too large for those of *P. bicolor*, to which it might otherwise be referred.

— **Polyporus crenatus** Berk.

The type specimens in Herb. British Museum are *P. flabelliformis* with a lobed margin, a fairly frequent form.

— **Polyporus Kœnigii** Berk.

The type specimens in Herb. British Museum are apparently *P. grammocephalus* or *P. russoceps*. They have not been microscopically examined.

— **Polyporus zeylanicus** Berk.

The type in Herb. British Museum is the same as specimens distributed from the Philippines as *Polystictus pergamenus* (Berk.) Bres., and from Annam as *Polystictus pergamenus* Fr. Presumably these records are based on the identity of the specimens concerned, with *Hexagonia pergamenea* Berk. *P. zeylanicus* requires comparison with the latter, a point which I regret I overlooked when in England.

— **Polyporus nigrocinctus** Berk.

The specimens in Herb. British Museum are labelled " *Boletus fragilis* Fl. Zeyl," and marked by Berkeley *P. nigrocinctus var.* It seems probable that they are *Tr. occidentalis.*

— **Polyporus dubius** Berk.

The type is in Herb. British Museum ; it somewhat resembles *P. Gaudichaudii*, but is thicker, and has different pores.

— **Polyporus sericellus** Lév.

Described from Ceylon specimens by Léveillé in Ann. Sci. Nat., Ser. 3, V. (1846), pp. 111–167. Lloyd (Synopsis of the section Apus of the Genus Polyporus) states that no type is known.

— **Polyporus phæus** Lév.

Described from Ceylon specimens by Léveillé (*loc. cit.*). Lloyd states (Synopsis of the Genus Fomes) that *Polyporus phæus* Berk. is *Fomes melanoporus.*

— **Polyporus siennæcolor** Cooke.

Polyporus siennæcolor was part of Thwaites 605. It was labelled *P. siennicolor* by Berkeley on the herbarium specimen, but the name was not published by him. Cooke, in his description in Grevillea, gives the Berkeleyan number *2379, but this is a number which Cooke inserted in the MSS. catalogue of Berkeley's herbarium. The piece of paper to which the specimen is gummed fits into one of the sheets, Thwaites 605, and thereby affords confirmation of Cooke's statement that it was part of that Thwaites' number. There are two other

specimens, labelled "*Pol. siennæcolor* B. Panuré" by Berkeley, which were probably named by him prior to the Ceylon specimen, but from Cooke's citation the Ceylon specimen is the type. It is plane, subcircular, about 5 cm. diameter, with a short lateral stalk; it resembles in colour a dull *Fomes lucidus*, purple-red, but very thin; the context is eaten out by insects, but was apparently pale. The sheet from which it was removed by Cooke contained the thin form said to be young *Fomes dochmius*, and the stalked and resupinate pieces of *P. zonalis*, of which the stalked specimens were named *P. cartilagineus*. Except for the colour, one might refer *P. siennæcolor* to *P. zonalis* also. It has a more decided stalk, but is margined behind like several recent collections of *P. zonalis*.

— **Polyporus griseus** Bres.

Collected at Colombo and Peradeniya by von Höhnel, and described by Bresadola in Ann. Myc., X., p. 494. Lloyd considers that this is *P. ostreiformis*.

— **Polyporus rugulosus** Lév.

Collected by von Höhnel at Peradeniya and recorded by Bresadola (*loc. cit.*). Lloyd states that this is usually taken to be *P. zonalis*; no type known.

— **Polyporus lucidus** (Leys.) Fr.

This species was recorded by Berkeley from Gardner's collection, but was not included in the "Fungi of Ceylon." There are apparently no Ceylon specimens of this species in Herb. Kew.

— **Polyporus Amboinensis** (Lam.) Fr.

Recorded by Berkeley from Gardner's collection, but not included in the "Fungi of Ceylon." No Ceylon specimens in Herb. Kew. The specimens I have seen of this species in European Herbaria do not impress me as being more than immature examples of *Fomes lucidus*.

— **Polyporus rufoflavus.**

Collected by Beccari at Colombo, and identified by Cesati. This is otherwise only known from America.

As Cesati describes his specimen as laccate, he probably had *Polyporus lucidus*, the lower surface of which may turn yellow in drying.

— **Polyporus gilvus** Schw.

Collected by von Höhnel at Peradeniya, and recorded by Bresadola (*loc. cit.*). See *P. holosclerus*, *P. isidioides*, and *P. senex*.

— **Polyporus zonatus** Fr.

Collected by Beccari on Pedrotalagala, and recorded by Cesati.

— **Fomes substygius** Cooke.

Under *Polyporus senex*, in "Fungi of Ceylon," Berkeley and Broome noted that one form was repeatedly zonatosulcate. This was subsequently cited by Cooke as *Fomes substygius*.

— **Fomes levissimus** Fr.

Recorded for Ceylon in Fries, Epicrisis ; said to have been collected in Ceylon by Wahlenberg. As the latter collected in Africa, the locality may be an error. Lloyd (Synopsis of the Genus Fomes) states : "My notes concerning the type are ' very poor, not recognizable, not a *Fomes* however.' I have since gotten *Fomes floccosus* from Ceylon, and from description of *levissimus*, I believe it is probably same."

— **Fomes ulmarius** Fr.

Collected by von Höhnel at Peradeniya, and recorded by Bresadola (*loc. cit.*).

— **Fomes lignosus** Kl.

Collected by von Höhnel at Peradeniya, and recorded by Bresadola (*loc. cit.*). See *P. contractus* Berk.

— **Poria hypolateritia** Berk.

Collected by von Höhnel at Peradeniya, and recorded by Bresadola (*loc. cit.*).

510. **Trametes colliculosa** Berk. (Thwaites 568 ; Gardner 97).

In Herb. Kew are Gardner 97, Gardner (Dimbula), and Gardner (without number) ; also Thwaites' specimens (without number). There is no specimen marked

" Damboul, March, 1868," as cited by Berkeley and Broome, but several Ceylon specimens are not localized. All are *Trametes* (*Hexagonia*) *ochroleuca*.

511. **Trametes rugosa** B. & Br.

The type in Herb. Kew, " Thwaites 568, Central Province, 1868," is a single specimen, a rather thick form of *Trametes ochroleuca*, according to Lloyd. The sections marked Thwaites 568 in Herb. Peradeniya appear to be nearer *Hexagonia durissima*, but they are scarcely identifiable.

512. **Trametes lobata** Berk. (257).

I was unable to find any specimen marked Ceylon, or 257, *sub T. lobata* in Herb. Kew. A Ceylon specimen in Herb. British Museum, *ex* Herb. Broome, is *Polyporus Peradeniæ*.

513. **Trametes læticolor** Berk.

Herb. Kew contains a Ceylon specimen, coll. Gardner, and another Ceylon specimen without collector's name. These are *Trametes ochroleuca*.

514. **Trametes occidentalis** Fr. (Gardner 77, 95, 122).

In Herb. Kew *sub P. occidentalis* is 77, labelled *Trametes occidentalis ;* also Gardner 77, 95, 122, and Thwaites, 1850. In Herb. Peradeniya are Thwaites 77 and 222. The latter are *Irpex flavus*.

515. **Trametes gibbosa** Fr. (406).

The sheet of Thwaites 406 is in Herb. Kew, but the specimen is missing.

516. **Trametes levis** Berk. (121).

Only one specimen, from Gardner, in Herb. Kew.

517. **Trametes versiformis** B. & Br. (968).

Thwaites 968 in Herb. Kew contains four pieces, marked by Bresadola : " a–b ne pas Tr. = d qui serait le type de *Trametes versiformis :* c ne pas = ab, ne pas = d : sont tres especes diverses." C is represented in Herb. Peradeniya, and is either *P. niphodes*, or some closely allied species. It appears to me that a, b, and d, might be the same species.

— **Trametes lactinea** Berk.

This was described by Berkeley from König's collection " König, Herb. British Museum, without habitat." There is a fine specimen in the Herb. British Museum, which agrees with specimens recently collected in Ceylon. It was recorded for Ceylon by Berkeley from Gardner's collection, and there are three Ceylon specimens so named in Herb. Kew. The latter are somewhat softer than the British Museum specimen. One marked by Berkeley, " *Trametes lactinea* var.," is marked " doubtful " by Bresadola. A third specimen labelled " Ceylon " is marked " *Trametes lactinea* type " (unsigned), and " co-type " by Lloyd. All are thinner than the British Museum specimen. *Trametes lactinea* was not included by Berkeley and Broome in " Fungi of Ceylon."

— **Trametes corrugata** (Pers.) Bres.

Collected by von Höhnel at Peradeniya, and recorded by Bresadola (*loc. cit.*). Is *Polyporus* or *Trametes Persoonii*.

518. **Dædalea pavonia** Berk. (Gardner 108).

In Herb. Kew are two parts of Gardner 108, one marked *Dædalea pavonia* Berk., and the other *Dædalea pavonia var.* In the same cover are two specimens, marked " *Dædalea pavonia* Berk., Dimboola, Ceylon, Gardner." The latter specimens are *Polyporus vittatus* Berk., and are so marked by Bresadola. But the type is Gardner 108, Hantane range ; and the type specimens are not *P. vittatus*. The type specimens are much insect-eaten ; the largest is about 10 cm. diameter, probably originally white, zoned gray, red behind ; they appear to be thin specimens of *Trametes ochroleuca*.

519. **Dædalea subsulcata** B. & Br. (567).

Thwaites 567 is in Herb. Kew and Herb. Peradeniya. In Herb. Peradeniya this number contains probably two species : one, with dædalioid pores, and a finely tomentose or almost glabrous upper surface ; the other, with lenzitoid pores, and a more coarsely tomentose surface.

— **Dædalea inæquabilis** Berk.

The type of this species, which was collected by König, is in Herb. British Museum. It is *Hexagonia ochroleuca*.

— **Dædalea vetulina** Ces.

This species was collected by Beccari on Pedrotala gala. Cesati was in doubt whether the single specimen should be referred to *Lenzites* or *Dædalea*. From the description it may be suggested that it was *Lenzites betulina*, which grows at that elevation in Ceylon.

— **Dædalea flavida** Lév.

Collected by von Höhnel at Peradeniya, and recorded by Bresadola (*loc. cit.*). ? *Hexagonia ochroleuca*.

— **Dædalea pruinosa** Lév., forma trametoidea (= Hexagonia glabra Lév.).

Collected by von Höhnel at Peradeniya, and recorded by Bresadola (*loc. cit.*). *Fide* Lloyd, this should be referred to *Hexagonia ochroleuca*.

520. **Hexagonia crinigera Fr.** (566).

Thwaites 566 in Herb. Peradeniya is *Hexagonia apiaria*.

521. **Hexagonia Kœnigii** B.

The specimen at Kew is effete. Bresadola has marked it *H. apiaria*, and Lloyd has come to the same conclusion (Synopsis of the Genus Hexagona, p. 44).

522. **Hexagonia polygramma** Mont. (365).

Ceylon specimens are said to be all referable to *Hexagonia discopoda* Pat. & Har. Thwaites 365, in Herb. Peradeniya, is the medium-pored form named *H. tenuis*.

523. **Hexagonia similis** B. (211).

Thwaites 211, in Herb. Kew, is marked by Bresadola " not *Hexagonia*, but a *Polyporus* unknown to me." The same species is Thwaites 211 in Herb. Peradeniya ; it appears to be *Polyporus luteo-olivaceus*. Another specimen in Herb. Kew, collected by Thwaites in 1850, marked " Inter *H. affinem* et *polygramma* intermedia,"

is *H. discopoda*. There is also another specimen, no date or number, originally about 6 inches in diameter, half from Herb. Cooke and half from Herb. Berkeley ; my notes on this example have been mislaid.

524. **Hexagonia durissima** B. & Br.

— **Hexagonia sulcata** Berk.

This species was described from Gardner's collection, and is probably the same as *Hexagonia durissima*. Lloyd (*loc. cit.*) states : " This strongly-marked species is only known from Ceylon. Berkeley published it in 1847 with a good figure, and sent specimens to both Fries and Montagne. That sent to Montagne was typically sulcate, but the specimen to Fries was more even. Berkeley did not retain a specimen in his own herbarium, and when some twenty years later he received the smooth form also from Ceylon he described it as *Hexagonia durissima*. It is the same as the specimen of *sulcata* he sent Fries. Whether or not it is the same species as *sulcata* I do not know, but I think it probably only a smooth form."

Hexagonia durissima is represented in Herb. Kew and Herb. Peradeniya. Though there is now no specimen of *H. sulcata* in Herb. Kew, it is clear that Berkeley retained one for some time, for there is a specimen in the British Museum which he gave to Phillips.

525. **Hexagonia adnata** B. & Br. (610).

The type in Herb. Kew is merely a fragment in a much damaged condition, and hardly warranted a name. It was a large-pored, thick species. Lloyd (*loc. cit.*) regards it as an anomaly of some kind.

526. **Hexagonia pergamenea** B. & Br.

Fide Lloyd, this is a species close to *Polystictus dermatodes*. In my notes I find that I have put it down as *T. dermatodes*, but now think that that determination may be erroneous. It requires comparison with *Polyporus zeylanicus* Berk. A specimen forwarded to me from Annam, determined by Graff as *Polystictus*

pergamenus Fr., is exactly *Polyporus zeylanicus*, except that the pores are not fully developed; and another specimen, from the Philippines, determined by Bresadola as *Polystictus pergamenus* (Berk.) Bres., is the same species. It remains to be determined whether *P. zeylanicus* is a form of *T. dermatodes* or a distinct species.

— **Hexagonia brevis** Berk., Kew Garden Miscellany, 1854, p. 229.

There is no type of this species at Kew or at the British Museum.

— **Hexagonia Deschampsii** Hariot, Bull. Soc. Myc., France, VII., p. 207.

This species was collected by Deschamps in Ceylon in 1891. Lloyd states that abundant specimens reached Berkeley from Ceylon, and were referred by him to *H. crinigera*.

— **Hexagonia velutina.**

Recorded for Ceylon by Lloyd (Synopsis of the Genus Hexagona, p. 14). Lloyd states: "Nearly the same plant (one collection) reached Berkeley from Ceylon. He referred it to *variegata*." So far as I am aware, Berkeley never published this record. I regret that I overlooked Lloyd's record, and consequently did not examine this species at Kew.

527. **Favolus ruficeps** B. & Br. (46 in part).

Thwaites 46 is represented in Herb. Kew and Herb. Peradeniya, *sub F. ruficeps*. It is *Hexagonia* rather than *Favolus*.

528. **Favolus brasiliensis** Fr. (35 in part).

Herb. Kew contains *sub F. brasiliensis*, Thwaites 35, marked by him: "This has a disagreeable fishy smell when fresh," and also specimens collected by Thwaites in 1854. In Herb. Peradeniya B. & Br. 528 and 530 are on the same sheet. This is apparently not the *F. brasiliensis* figured by Lloyd (Polyporoid issue, No. 2, p. 20). (See B. & Br., 530.)

529. **Favolus Friesii** B. & C. (November, 1867).

One Ceylon specimen, in Herb. Kew, is labelled "*Favolus lacerus* Fr., Ceylon, 1854," another single specimen is marked Thwaites 91. Both are small examples of the species assigned to *F. brasiliensis*.

530. **Favolus multiplex** Lév. (35, cum icone).

In Herb. Kew, *sub F. multiplex*, are Thwaites 35 ; and also specimens collected by Thwaites in 1851, marked "*Favolus multiplex* Lév.=*Favolus Thwaitesii* Berk." The latter was published as *Favolus multiplex var. Thwaitesii*, in Kew Garden Miscellany, 1854, p. 229. In Herb. Peradeniya, *Favolus multiplex* and *F. brasiliensis* are on the same sheet.

The specimens of this are merely the older form of those assigned to *F. brasiliensis ;* the figure, however, labelled *F. multiplex*, represents the thinner younger stage, the specimens of which were placed under the former name. If the division of Thwaites 35 into two species were correct, the figure should have been named *F. brasiliensis*.

Berkeley and Broome's 528, 529, 530 are all the same species, probably *Favolus multiplex* Lév., but apparently not the *Favolus multiplex* figured by Theissen in Polyporaceæ Austro-brasilienses, 1911.

531. **Favolus tessellatus** Mont. (46, cum icone).

Herb. Kew contains eleven specimens of Thwaites 46, *sub F. tessellatus*. There are six specimens in Herb. Peradeniya. The figure represents *F. ruficeps*, but is labelled *F. tessellatus*. The Ceylon specimens are almost sessile, and probably not *Favolus tessellatus* Mont. They agree exactly with Lloyd's figure of *Hexagonia Miquelii* (Mont.) in Synopsis Hexagona, p. 36.

532. **Favolus scaber** B. & Br. (618, 46 in part).

In Herb. Kew are five specimens of Thwaites 618 and one specimen Thwaites 46. This species bears much resemblance to *F. tessellatus*, but is not glabrous above. It is distinct, and should be *Hexagonia*, not *Favolus*.

— **Favolus cucullatus** Mont.

Recorded by Cesati for Peradeniya from Beccari's collection. Lloyd (Synopsis of the Genus Hexagona, p. 35) states that Beccari's Ceylon collection at Kew is named by Cesati *Favolus chartaceus*, and is probably *Hexagona cucullata*. From Cesati's description, *sub F. cucullatus*, it would appear to be identical with the Ceylon species assigned to *F. multiplex*.

The following list includes all the Polyporoids known to the writer to occur in Ceylon, either from herbarium specimens or recently-collected examples, with the exception of some species as yet unnamed, and others, *Resupinati*, recorded by Berkeley and Broome, which are based on undetermined mixtures, or which have not been recently collected and consequently cannot be redescribed.

The prevalence of Polypori, or at least of those species which are saprophytic, in any country depends obviously on the quantity of fallen timber and decaying stumps available, provided that climatic conditions are favourable to their development. Over the south-western parts of Ceylon climatic conditions are favourable almost throughout the year, and the drier northern and eastern regions have a rainy season of about three months, which suffices for the growth of a normal number. Fallen timber and old stumps are plentiful, at least in the wetter regions, with the consequence that specimens, if not species, of Polypori are abundant.

When any great extension of planting occurs in Ceylon, large tracts of jungle are felled and burnt, a process which leaves tree trunks scattered in all directions, and countless huge stumps up to 4 feet in height over thousands of acres. Such conditions prevailed during the extension of rubber planting in 1905–1910, and it was possible then to gather cartloads of Polypori. Yet the nett results in such a case are disappointing, as comparatively few species colonize the logs which lie on the bare hillsides, exposed alternately to the scorching sun and the tropical rains. Vast numbers appear, but they are, as a rule, limited to a few species, and one grows weary of seeing *Trametes ochroleuca*, *Trametes occidentalis*, *Trametes Persoonii*, *Polyporus sanguineus*, *Lenzites repanda*,

with, perhaps, *Polyporus gilvus* and *Fomes senex*. Only when logs have been rolled into an uncleared ravine, under the shelter of the trees and shrubs, is anything rarer to be found.

Though our knowledge of the distribution of Ceylon Polypori is only in a preliminary state, it is clear that there are considerable differences in the distribution of the various species which can be, more or less, correlated with the varying climatic conditions in different regions of the Island. Some species occur in the wet low-country only, others have only been found at the top of the hills (5,000 to 7,000 feet), while others again prefer the dry low-country zone.

Among the species which are generally distributed over the wet zone, from sea level to the hill tops, are *Lenzites repanda*, *Polyporus gilvus*, *P. agariceus*, *P. Gaudichaudii*, *Fomes senex*, *F. caryophylli*, and *Trametes occidentalis*. *Fomes applanatus* has the same range, and is common at 5,600 feet, but *Fomes lucidus*, though occurring at 5,600 feet, is distinctly rarer in these higher regions.

Among the species apparently confined to the wet low-country we find *Fomes dochmius*, *F. rhinocerotis*, *Trametes dubius*, *Polyporus rubidus*, *P. Didrichsenii ;* but a large number of low-country species ascend to the elevation of Peradeniya, these latter including *Polyporus ostreiformis*, *P. zonalis*, *P. durus*, *P. grammocephalus*, *P. sanguineus*, *P. xanthopus*, *Fomes subresinosus*, *F. lignosus*, *F. kermes*, *Trametes ochroleuca*, and the ubiquitous and polymorphic *Trametes Persoonii*.

The up-country jungles, at 5,000 to 7,000 feet, have their own peculiar species in *Polyporus elongatus*, *P. versicolor*, *P. anebus*, *P. ochroleucus*, *Fomes pectinatus*, *Dædalea subsulcata*, and *P. secernibilis*, while *P. dictyopus* and *P. setiporus*, which are abundant there, descend to medium elevations. In the Hakgala Botanic Garden *Trametes cervinus* abounds, and *Lenzites betulina* and *L. abietina* occur, but in this locality European introductions are to be suspected ; *Boletus luteus* grows there in troops, and *Collybia radicata* has been found.

The dry regions have not yet been worked with any approach to thoroughness, and we have very few records from them. *P. grammocephalus*, *P. sanguineus*, *P. xanthopus*, *Trametes*

ochroleuca, *T. Persoonii*, *Fomes lucidus*, *F. senex*, and *F. subresinosus* occur, and our only records of *P. luteus* and *P. affinis* are from these districts. The most striking feature, mycologically, as one traverses these parched tracts in the dry season, is the abundance of *Fomes rimosus*. Noteworthy, too, in the jungles, is the prevalence of *Hexagonia apiaria*, a species I have never collected in the wet zone.

LENZITES.

Lenzites abietina Fr.

2690, Hakgala, September, 1908 (det. Lloyd).

Lenzites betulina Linn.

3433, Hakgala, May, 1912 (det. Lloyd); 4069, Hakgala, April, 1914; 4458, Hakgala, 1914 (det. Lloyd).

Lenzites repanda Pers.

Lenzites applanata Fr., B. & Br., Fungi of Ceylon, 431; *Lenzites deplanata* Fr., B. & Br., Fungi of Ceylon, 432.

2378, Peradeniya, May, 1907; 2965, Hapugastenna, October, 1909; 2178, Yatipauwa, November, 1906; 3396, Mirishena, February, 1912 (det. Lloyd); 3586, Peradeniya, October, 1912; 4633, Peradeniya, January, 1915; 4762, Gikiyanakanda, July, 1915 (det. Lloyd). 2180 (Trametes), Peradeniya, June, 1906 (det. Lloyd).

Lenzites striata Swartz.

2773, Kelani estate, August, 1908 (det. Lloyd); 4765, Colombo, July, 1915.

Lenzites subferruginea Berk.

3594, Lagos estate, December, 1912 (det. Lloyd).

Lenzites aspera Kl.

Not recently collected.

POLYPORUS.

Polyporus ostreiformis Berk.

4253, Colombo, October, 1914; 4255, 4256, Galle, October, 1914; all det. Lloyd. 3640, Gangaruwa, April, 1913; 4196, Colombo, July, 1914. Lloyd considers that *P. griseus* Bres. is the same species (Section Apus of the Genus Polyporus, p. 379).

Polyporus ochroleucus Berk.

3447, Hakgala, May, 1912 (det. Lloyd); 2970, Hapugastenna, October, 1909; 2684, Hakgala, September, 1908; 3154, Hakgala, May, 1910; 3975, Hakgala, April, 1914; 4144, Hakgala, September, 1914; 4717, Hakgala, April 1915; 4086, Peradeniya, August, 1914; 4738, Peradeniya, June 1915.

Common at Hakgala; usually pendent from comparatively thin branches or stems.

Polyporus obtusus Berk.

3551, Peradeniya, August, 1912 (det. Lloyd).

Pure white when fresh.

Polyporus hydnophorus B. & Br.

Polyporus (Resupinati) hydnophorus B. & Br., Fungi of Ceylon, 504.

4225, Peradeniya, October, 1914; 4374, Peradeniya, 1912.

Dimidiate, decurrent behind. Pilei narrow orbicular, about 2 cm. long, 0·5 cm. broad, confluent; white, becoming ochraceous when old. Upper surface strigose, or bearing erect, Stilbum-like processes. Pores up to 3 mm. deep, dissepiments at first thick, becoming thin, irregular. Pores about 0·2 mm. diameter, but variable, up to 1 mm. Substance soft. Frequently forming pulvinate cushions, circular, up to 1 cm. diameter, or linear when emerging from cracks in the bark; margin tomentose; these cushions may bear pores in the centre and stilboid processes towards the margin, or may be covered with stilboid processes only. These processes are clavate, up to 0·5 mm. high, 0·1 mm. diameter below, 0·2 mm. diameter above; stalks tomentose; head bearing simple basidia with oval, pointed conidia, 8–12 × 5 μ.

In cases where the fungus has emerged from a crack in the bark of a branch, and the bark has subsequently fallen off and exposed the thin film of mycelium which overlies the wood, this mycelium produces the Stilbum conidial form in abundance.

Polyporus secernibilis Berk.

Polyporus secernibilis Berk., Hook. Lond. Jour. Bot. (1847), p. 500 ; *Polyporus dissitus* B. & Br., Fungi of Ceylon, 454.

3410, Haputale, March, 1912 (det. Lloyd as *dissitus*) : 3894, Hakgala, January, 1914 ; 4038, Hakgala, April, 1914.

Bresadola and Lloyd consider that *P. dissitus* is the same as *P. adustus* of temperate climates. Our species is at first pure white, watery, and spongy, hymenium subtranslucent ; the hymenium becomes black when old, and on drying. This species apparently occurs only up-country.

Polyporus introfuscus n. sp.

P. secernibilis of Lloyd, non Berk., in Herb. Kew. 3595, Peradeniya, December, 1912 ; 3474, Peradeniya, May, 1912.

Dimidiate, decurrent behind, or pseudostalked, fused into large imbricated masses. Individual pilei comparatively small, up to 4 cm. long and 3 cm. broad, plane, moderately thick (up to 8 mm. behind), pale yellow-brown, with darker brown zones ; radially silky. Context coarsely horizontally fibrous, dark brown when moist, pale brown when dry. Lower surface pallid, becoming brownish when bruised, black-brown when dry. Pores minute ; pore layer up to 1·5 mm. deep. Spores white in mass, narrow-oval or subcylindric, 5–8 × 3 μ.

Dimidiatis, decurrentibus, vel pseudostipitatis, imbricatis ; pileis parvis, ad 4 cm. long., 3 cm. lat., planis, crassiusculis, pallide flavo-brunneis, zonatis, radiatim sericeis ; contextu horizontaliter fibroso, vivo fuscobrunneo, sicco pallide brunneo ; hymenio pallido, sicco nigro-brunneo ; poris minutis, ad 1·5 mm. long. ; sporis albis, angusto-ovalibus vel sub-cylindraceis 5–8 × 3 μ.

Polyporus conchoides Mont.

3748, Peradeniya, April, 1913 (det. Lloyd).

Polyporus zonalis Berk.

Polyporus cartilagineus B. & Br., Fungi of Ceylon, 459 ; *Polyporus* (*Resupinati*) *epilinteus* B. & Br., Fungi of Ceylon, 509.

2685, October, 1908, May, 1909 ; 3295, December, 1911 ; 4236, November, 1914 ; 4484, January, 1915 ; all Peradeniya.

Common throughout the low-country. The pilei develop on anything that comes in the way of the mycelium, even on bricks. Easily distinguished from *Fomes lignosus*, when fresh, by the livid gray, sometimes pallid, hymenium, and by the upper surface being wood colour or reddish when wet, instead of the deep red-brown of *Fomes lignosus*.

Polyporus rugulosus Lév., recorded by Bresadola as collected by von Höhnel at Peradeniya, is stated by Lloyd to be usually applied to a thin form of *P. zonalis*. This form is apparently abundant in Malaya, but we have not collected it in Ceylon

Polyporus strigatus Berk.

Not collected recently.

Polyporus semilaccatus Berk.

2967, Hapugastenna, October, 1909 (det. Lloyd) ; 3754, Moratuwa, September, 1913 (det. Lloyd) ; 3441, Hakgala, May, 1912 (det. Lloyd).

At first grayish-white or grayish-brown, with faintly brown zones, minutely tomentose ; gradually becoming almost entirely purple-brown or blackish-brown, and glabrous, sometimes a few grayish zones persisting. Hymenium white, becoming ochraceous ; substance white. The Hakgala specimen had, when young, a yellow margin, followed by a red-brown zone, then reddish-purple to purple-black ; it is possibly a different species.

Polyporus anebus Berk.

Polyporus bicolor Jungh. *Polyporus polytropus* B. & Br., Fungi of Ceylon, 455.

4723, Hakgala, April, 1915 (det. Lloyd); 3465, Hakgala, May, 1912. (det. Lloyd); Haputale, May, 1916.

In my experience an up-country species, and not common.

Polyporus vittatus Berk.

Not collected recently.

Polyporus durus Jungh.

3305, Peradeniya, December, 1911 (det. Lloyd); 3752, Henaratgoda, September, 1913; 3971, Peradeniya, February, 1914; 4464, Peradeniya, October, 1914 (det. Lloyd); Peradeniya, August, 1915.

A common low-country species, frequently occurring in trametoid masses with a narrow free margin. Deep violet-purple when fresh, acquiring an ashy "bloom" on drying.

Polyporus vinosus Berk.

2974a, Hapugastenna, October, 1909 (det. Lloyd); 4701, Peradeniya, February, 1915 (det. Lloyd).

Polyporus gilvus Schw.

Polyporus isidioides Berk., in Fungi of Ceylon, 465; *Polyporus holosclerus* Berk., in Fungi of Ceylon, 466.

2674, Peradeniya, October, 1908 (det. Lloyd); 3395, Peradeniya, February, 1912; &c.; 4596, Hakgala, May, 1913; 4574, Hakgala, May, 1912; 4054, Hakgala, April, 1914 (det. Lloyd); 3645, Hakgala, May, 1913. (det. Lloyd); 3720, Culloden, August, 1909; 2780, Ferriby estate, February, 1909; 2930, Culloden, August, 1909 (det. Lloyd); 2760, Gangaruwa, November, 1908; 2761, Henaratgoda, December, 1908; 3553, Henaratgoda, August, 1912 (det. Lloyd); 3865, Kalupahani, March, 1912; 3462, Kalupahani, May, 1912 (det. Lloyd).

One of the commonest Ceylon Polypori. *P. scruposus* forms are frequent.

Polyporus carneo-fulvus Berk.

4705, Hakgala, April, 1915 (det. Lloyd).

Polyporus lienoides Mont.

3589, Lagos estate, Kalutara, December, 1912 (det. Lloyd).

Polyporus substygius Cooke.

2349, Hakgala, April, 1907 ; 2968, Hapugastenna, October, 1909 ; 4159, Hakgala, September, 1914.

Polyporus rubidus Berk.

2777, Puwakpitiya, February, 1909.

Apparently a low-country species ; rose-coloured when fresh. Not common.

Polyporus Didrichsenii Fries.

3397, Mirishena, February, 1912 (det. Lloyd).

Polyporus discipes Berk.

Gardner's specimen is the only one known.

Polyporus grammocephalus Berk.

Polyporus Kœnigii Berk., Ann. Mag. Nat. Hist., X., pp. 369–384.

2182, Ukuwela, November, 1906 ; 2982, Maha Iluppallama, September, 1909 ; 3842, Siyambalagomuwa, November, 1912 ; 4083, Gangaruwa, July, 1914.

Common in the low-country, both in the wet and dry zones, but not found in up-country districts. White specimens occur.

Polyporus russiceps B. & Br.

Not found recently.

Polyporus Emerici Cooke.

3298, Peradeniya, December, 1911 (det. Lloyd).

Polyporus siennæcolor Cooke.

Not found recently.

Polyporus sanguineus Linn.

3237, Eladuwa, May, 1910 (with *Trametes* forms) ; 3297, Peradeniya, December, 1911 ; 3311, Maha Iluppallama, January, 1912 ; 3321, Matale, January, 1912 ; 3525, Peradeniya, July, 1912 ; 3600, Peradeniya, December, 1912 ; 4254, Colombo, October, 1914 ; 4776, Colombo, July, 1915.

One of our commonest Polyporoids. Records of *Trametes cinnabarina* from the tropics appear to relate to thick or misshapen specimens of *sanguineus*; the Ceylon specimens under the two names are indistinguishable. White specimens, *i.e.*, fresh, not old and bleached, occur with the normal form.

Polyporus udus Jungh.

4662, Peradeniya, May, 1915 (det. Lloyd); 4364, Peradeniya, December, 1914.

Brownish-gray, with scattered, irregular, purple-brown spots; or sordid brown, with radial irregular, black-brown streaks. Flesh white, more than 1 cm. thick in the centre; hymenium pallid, subtranslucent. Spores white, oblong-oval, 10–13 × 5–6 μ; basidia 4-spored; sterigmata up to 8 μ long, conical. Soft and watery, becoming membranous when dried.

Polyporus rhipidium Berk.

3557, Peradeniya, August, 1912; 4174, Peradeniya, October, 1914. White at first.

Polyporus dictyopus Mont.

Polyporus picipes Fr., in B. & Br., Fungi of Ceylon, 442.

2809, 2810, 2689, 3732, 4045, 4495, all from Hakgala. 3472, Hakgala, May, 1912 (det. Lloyd as *P. Blanchetianus*).

I find this chiefly up-country. The pileus is at first white, then yellow-brown to chestnut, finally black. The specimen determined as *P. Blanchetianus* was a small example of the normal form. It varies in diameter from 1–10 cm.

Polyporus hemicapnodes B. & Br.

2710, Hakgala, September, 1908.

Cartilaginous, deeply umbilicate, or infundibuliform, margin incurved, pale ochraceous brown, smooth. Pore surface white, turning brown when bruised; pores minute. Stalk black-brown, slightly tomentose, base expanded or not. My specimens are not "primum minutissime sericeo-lineato."

Polyporus agariceus Berk.

Polyporus arcularius Fr., in B. & Br., Fungi of Ceylon, 436.

2261, Peradeniya, September, 1906 ; 3559, Peradeniya, August, 1912 ; Pattipola, October, 1906 ; 3355, Peradeniya, November, 1911 ; 2175, Hakgala, September, 1908 ; 4066, Hakgala, April, 1914.

Common : spores white, oblong-oval, 6–8 × 2–3 μ.

Polyporus obovatus Jungh.

Polyporus dilatatus Berk., Hook. Lond. Jour. Bot. (1847), p. 499 ; *P. Adami* Cooke, Proc. Bot. Soc., Edinburgh, XIII., p. 171. 2962, Hapugastenna, October, 1909.

Subcartilaginous ; dark purple-brown, obscurely zoned ; or yellow, with purple-brown, gray-brown, or yellow-brown zones. Resembles *P. xanthopus* when fresh, but has a dull, not polished, surface. Pore surface white, then yellow. Stalk yellow, minutely tomentose.

Polyporus heteroporus Fries.

4050, Hakgala, April, 1914 (det. Lloyd) ; 4257, Hakgala, September, 1914 (det. Lloyd).

Specimens flabelliform, growing from the side of a log. I have one mesopod specimen from the top of the same log.

Polyporus sideroides Lév.

3552, Henaratgoda, August, 1912 (det. Lloyd) ; 3649, Henaratgoda, May, 1913 ; 4491, Henaratgoda, January, 1915 ; 3528, Peradeniya, July, 1912 ; 3750, Peradeniya, August, 1913 ; 3851, Peradeniya, November, 1913 ; 3907, Peradeniya, December, 1913 ; 3952, Hakgala, January, 1914 (det. Lloyd) ; 4756, Hakgala, April, 1915.

At Henaratgoda (low-country) and Peradeniya this grows on palm stumps ; at Hakgala (5,600 feet) on dicotyledonous stumps.

Polyporus rugosus Nees.

3898, Peradeniya, November, 1913 ; 4754, Peradeniya, July, 1915 ; 2175, Peradeniya, December, 1906 ; 2732, Peradeniya, 1908, &c.

Fairly common. It grows on the ground round decaying stumps, not actually on the wood. The growing point of the stalk is white. The stalk grows up to its full height and then spreads horizontally to form the pileus, either all round, in which case the pileus is circular and the stalk central, or on one side, in which case the pileus is reniform and the stalk lateral. Adjacent stalks or pilei frequently touch in the actively growing stage and then fuse. The white apex of the stalk and the white growing edge of the pileus turn red when bruised, as does the white flesh (of the fresh plant) when cut. Spores, in mass, pale purple-gray, spherical, 7–9 μ diameter, apiculus small or not evident.

Polyporus vivax Berk.

4461, Hakgala, April, 1914 (det. Lloyd).

Polyporus versicolor Fr.

2348, 2359, 2688, 2712, 3437, 3443, 3450, 3468, 3469, 4070, all from Hakgala, 1907–1914.

Common at Hakgala. I have distributed this as *P. pictilis* Berk., but it is not so closely zoned as the type of that. It grows to a comparatively large size, up to 8 × 6 cm.; the lower surface is white or cream-coloured.

Polyporus appendiculatus B. & Br.

Polyporus sulphureus in B. & Br., Fungi of Ceylon, 450; *Polyporus lacteus* in B. & Br., Fungi of Ceylon, 452.

3917, Hakgala, January, 1914 (det. Lloyd as *sulphureus*); 3964, Hakgala, March, 1914. Also at Peradeniya.

Imbricated in large masses; lobes up to 20 × 12·5 cm., horizontal or suberect, plane or slightly convex; thickness 1–1·5 cm. Pale wood-coloured, or cream, or pallid, usually with a broad watery-looking brown zone towards the margin; margin subtranslucent. When dry becoming dirty white. Surface minutely tomentose. Lower surface pallid; pores minute; context cheesy.

Lloyd regards this as *Polyporus sulphureus*, from which perhaps it differs only in colour. In one instance, where a stump on the top of a bank produced the normal pallid form, a piece which grew from an exposed root on the side of the bank was orange-red.

Polyporus mesotalpæ Lloyd.

4467, Peradeniya, October, 1914 (Lloyd type) ; also Peradeniya, June, 1907, &c.

Mesopodial, with a thick stem ; stem up to 10 cm. high and 6 cm. diameter ; pileus up to 40 × 20 cm. and 10 cm. thick, usually tuberculate and lobed, depressed in the centre. At first wholly white, becoming deep chocolate ; surface minutely velvety, with a black crustaceous layer beneath. Context white when fresh, watery, turning red when cut. The whole fungus turns deep blackish-brown if handled in the white stage. Stalk deep chocolate-brown, minutely velvety. Pores minute, watery when fresh, forming a distinct layer about 2 mm. deep.

The species grown at Peradeniya on rotten stumps. The change of colour occurs rather late ; specimens are usually brought me in the white stage and change colour in the laboratory in a few hours. I have not yet succeeded in obtaining a painting or a spore print, as it is a most difficult species to dry, and specimens are usually smothered in moulds in a day or two.

Polyporus pilosus n. sp.

2459, Peradeniya, May, 1907.

Pileus circular, regularly convex, 13 cm. diameter, densely clothed with grayish-white, erect, fasciculate tomentum, which turns dark gray in drying ; margin incurved. Flesh white, spongy, thick, about 2 cm. thick near the stalk. Stalk central, 4·5 cm. high, 2·5 cm. diameter at the base, expanding upwards into the pileus, dirty white, tough exteriorly, spongy within. Pore surface white, even, descending on the stem ; stratum of pores distinct from the flesh of the

pileus ; depth of pores 5 mm., mouths strongly toothed and irregular, medium size.

I have seen only one specimen of this, which was brought to me in 1907. Mr. Lloyd, who saw it at Kew in 1911, informed me then that it was an unnamed species.

Pileo rotundo, convexo, 13 cm. diam., tomento griseo-albo, erecto, fasciculato, sicco fusco-griseo, dense vestito, margine incurvo ; carne albo, spongioso, crasso ; stipite centrali, sursum in pileo dilatato, sordide albo, intus spongioso, extra lento ; hymenio albo, plano, in stipite decurrente ; poris dentatis, irregularibus, ad 5 mm. long., mediocribus.

Polyporus violaceo-cinerascens n. sp.

2678, Peradeniya, October, 1908 ; 2845, Peradeniya, May, 1909.

Mesopodial. At first violet or purple, becoming ashy or pale brown when old. Pileus circular, up to 11 cm. diameter, strongly lobed, centre depressed and irregularly nodulose, obscurely zoned, minutely tomentose, subcartilaginous, tough. Flesh thin, brownish-white. Pore surface white, then violet, descending irregularly on the stem ; pores large, up to 0·75 mm. diameter, angular ; with a broad sterile margin. Stalk of the same colour and texture as the pileus, irregularly compressed and lacunose, up to 7 cm. high, 1·5 cm. broad, 7 mm. thick, central, equal or expanding upwards, sometimes bulbous at the base, sometimes rooting, clothed with violet or purple-black bristles. Spores white, broadly oval, 7–9 × 5–6 μ.

In rings among grass, probably from buried wood. Shown in 1911 to Mr. Lloyd, who informed me that it was then undescribed.

Mesopus ; primo violaceus vel purpureus, deinde cinereus vel pallide brunneus. Pileo rotundo, ad 11 cm. diam., lobato, centro depresso, irregulariter noduloso, obscure zonato, subtiliter tomentoso, subcartilagineo, lento ; carne tenui, brunneo-albo ; hymenio albo, deinde violaceo, in stipite irregulariter

decurrente ; poris magnis, angulatis ; margine sterile lato ; stipite concolori, irregulariter compresso, lacunoso ad. 7 cm. long., 1·5 cm. lat., 7 mm. crass., centrali, æquale vel sursum dilatato, modo basi inflato, modo radicante, violaceis vel purpureo-nigris setis vestito ; sporis albis, ovalibus, 7–9 × 5–6 μ.

Polyporus obscurus n. sp.

3481, Peradeniya, May, 1912, on rotten wood.

White, resupinate over a large area, with dimidiate pilei at the margin. Pilei semi-elliptic, about 1·5 cm. long, 6 mm. broad, laterally fused, white, fibrillose, radially ridged, margin acute. Pores small, oval, about 0·15 × 0·1 mm. Resupinate parts stout, pores up to 3 mm. long, not splitting on drying. Basal layer a thin weft of hyphæ from 0·1–0·2 mm. thick.

Albo, resupinato, margine dimidiato ; pileis semi-ellipticis circa 1·5 cm. long., 6 mm. lat., supra fibrillosis, radiatim rugosis, margine acuto. Parte resupinata, crassa, poris ad 3 mm. long. ; poris parvis, ovalibus, 0·15 × 0·1 mm. ; contextu tenui.

Polystictus.

Polystictus xanthopus Fr.

2429, Peradeniya, 1909 ; 2774, Peradeniya, January, 1909 ; 3609, Peradeniya, January, 1913 ; 3835, Peradeniya, June, 1913 ; 3901, Peradeniya, December, 1913 ; 4073, Peradeniya, July, 1914 ; 4506, Peradeniya, November, 1914 ; 4507, January, 1915 ; 2107, Ritigala, March, 1905 ; 3310, Maha Iluppallama, January, 1912 ; 2174, Polgahawela, February, 1907.

Common in the low-country.

Polystictus luteus Nees.

3581, Sigiriya, August, 1912 (det. Lloyd).

Polystictus affinis (Bl. et Nees) Fr.

2980, Maha Iluppallama, August, 1909 (det. Lloyd).

Polystictus flabelliformis Kl.

Polyporus crenatus Berk., Ann. Mag. Nat. Hist., X. (1842), pp. 369–384.

2680, Hakgala, September, 1908 ; 2679, ditto ; 3968, Hakgala, April, 1914 ; 4720, Hakgala, April, 1915 ; 2179, Kegalla, July, 1906 ; 3293, Peradeniya, December 1911 ; 4763, Peradeniya, August, 1915.

Polystictus setiporus Berk.

Polyporus cichoraceus in B. & Br., Fungi of Ceylon, 472.

2808, Hakgala, September, 1908 ; 3444, Hakgala, May, 1912 ; 3712, Hakgala, May, 1913 ; 2929, Peradeniya, August, 1909.

Polystictus Gaudichaudii Lév.

Polyporus Menziezii Berk., Fungi of Ceylon, 446 ; *Polyporus Thwaitesii* Berk., Hook. Lond. Jour. Bot. (1854), p. 229.

3304, Peradeniya, December, 1911 (det. Lloyd) ; 2965, Hapugastenna, October, 1909 ; 2871, Peradeniya, July, 1909 ; 2778, Ferriby estate, February, 1909 (det. Lloyd) ; 3749, Hakgala, September, 1913 ; 4457, Hakgala, November, 1914 (det. Lloyd).

Polystictus caperatus Berk.

Polyporus phocinus B. & Br., Fungi of Ceylon, 484.

4098, Gangaruwa, January, 1914 (confirmed by Lloyd).

The two recorded Ceylon gatherings of this species are both the thin form named *P. phocinus* by Berkeley and Broome.

Polystictus elongatus Berk.

2687, 3453 (det. Lloyd), 3470 (det. Lloyd), 3475 (det. Lloyd), 4065 ; all from Hakgala, where it is abundant.

The pilei are usually united behind by a thick leathery sheet of white tissue. Both the upper and the under surfaces are violet at first. Lloyd states that *P. pergamenus* is distinguished from *P. elongatus* by having the hymenium violet at first ; if this is the only distinction, the two are identical.

Polystictus luteo-olivaceus Berk.

3351 (det. Lloyd), 3642 (det. Lloyd), 3948, 4753 (det. Lloyd), 3529 ; all from Peradeniya.

Polystictus perennis Linn.

3896, Hakgala, January, 1914 (det. Lloyd).

Polystictus cinnamomeus Jacq.

Polyporus oblectans Berk., Fungi of Ceylon, 438.

2686, Peradeniya, July, 1908 ; 2809, Peradeniya, June, 1909.

I follow Lloyd in placing the Ceylon form under *P. cinnamomeus* rather than under *P. oblectans*.

Polystictus zeylanicus Berk.

Not collected recently.

FOMES.

? **Fomes hornodermus** Mont.

3945, Portswood, Kandapola, January, 1913 (det. Lloyd provis., specimen immature).

Fomes subresinosus Murr.

2470, Peradeniya, May, 1909 (det. Lloyd) ; 3755, Henaratgoda, September, 1913 ; Ritigala, March, 1905.

Spores pale brown, ovate, minutely warted, 15–18 × 12 μ.

Fomes floccosus Bres.

3303, Peradeniya, December, 1911 (det. Lloyd) ; 3497, Peradeniya, June, 1912.

Parasitic on *Poinciana regia* and *Bombax malabaricum*.

Fomes dochmius B. & Br.

2779, Puwakpitiya, February, 1909 ; 4706, Korossa, May, 1915.

When fresh, blue-black and violet-black, with a white margin ; minutely silky ; finally black, or weathered to gray, glabrous.

Fomes ferreus Berk.

Not collected recently. The type appears to me the same as 3754, Moratuwa, September, 1913, assigned to *P. semilaccatus*.

Fomes geotropus Cooke.

4052, 4053, Hakgala, April, 1914 (det. Lloyd).

Considered by some the tropical form of *F. ulmarius*. See Bresadola's record of *F. ulmarius* for Ceylon.

Fomes lignosus Kl.

2914, Peradeniya, August, 1909; 4237, Peradeniya, November, 1914; 4772, Houpe, July, 1915.

Common on stumps of *Ficus* spp., *Artocarpus integrifolia*, *Bambusa* sp., &c. Parasitic on *Hevea brasiliensis*, *Artocarpus*, Tea, *Manihot Glaziovii*, *Ficus* spp., *Derris*. Distinguished from *P. zonalis*, when fresh, by its deep red-brown upper surface, yellow margin, and orange hymenium.

Fomes kermes B. & Br.

2964, Hapugastenna, October, 1909.

Rare in the districts hitherto visited. Soft and spongy when fresh, resupinate, on the under surface of a rotten log in patches up to 15 × 10 cm. Free edge bright red, becoming darker in drying; hymenium orange-red, becoming dark red when dry.

Fomes Robinsoniæ Murr.

4704, Hakgala, April, 1915 (det. Lloyd).

Fomes adamantinus Berk var. **setiferæ** Lloyd.

3464, Kalupahana, May, 1912 (det. Lloyd).

Fomes caliginosus Berk.

2974, Hapugastenna, October, 1909 (det. Lloyd); 2868, Peradeniya, July, 1909.

Fomes setulosus Lloyd.

3442, Hakgala, May, 1912 (det. Lloyd); 3460, Hakgala, May, 1912; 3459, Hakgala, May, 1912 (det. Lloyd); 4147, Hakgala, September, 1914.

Fomes conchatus Pers.

4707, Hakgala, April, 1915 (det. Lloyd).

Fomes lamænsis Murr.

2969, Idangoda, September, 1909 (det. Lloyd).

Fomes rimosus Berk.

3596, 3597, 3598, Jaffna, August, 1912 (det. Lloyd); 2781, Ferriby estate, February, 1909 (det. Lloyd); 4702, Hakgala, April, 1915 (det. Lloyd).

The common Fomes of the dry region.

Fomes endotheius Berk.

4087, Peradeniya, August, 1914 (det. Lloyd).

Fomes caryophylli Rac.

2794, Peradeniya, February, 1909, on clove ; 3466, 3467, Hakgala, May, 1912 (det. Lloyd) ; 3966, 3973, Hakgala, April, 1914 ; 3580, Kanana, September, 1912 (det. Lloyd).

Fomes pectinatus Kl.

3445, Hakgala, May, 1912 (det. Lloyd).

A frequent species at Hakgala.

Fomes Sanfordii Lloyd.

3446, Hakgala, May, 1912 (det. Lloyd) ; 3963, Hakgala, March, 1914 (det. Lloyd) ; 3647, Hakgala, May, 1913.

Fomes senex Mont.

2879, Peradeniya, July, 1909 ; 2675, Indurawa, October, 1908 ; 3299, Waharaka, December, 1911 (det. Lloyd) ; 3322, Pallegodda, January, 1912 ; 3611, Gangaruwa, January, 1913 ; 4055, Hakgala, April, 1914 (det. Lloyd) ; Ritigala, March, 1905.

Fomes rhinocerotis Cooke.

2842, Yatipauwa, May, 1909 (det. Lloyd).

Pileus 7–11 cm. diameter, deeply infundibuliform, margin slightly recurved ; at first regular, afterwards lobed with new growth from the margin ; strongly radiately rugose ; concentrically sulcate. Reddish-purple ; new growth reddish-purple to red-brown, somewhat zoned ; margin yellow-brown. The newer parts bear narrow tomentose zones, old parts glabrous. Flesh white, corky, up to 7 mm. thick. Pore surface white ; pores minute, rather distant, brownish in section when old ; stratose. Stalk 4–8 cm. high, 7–12 mm. thick, somewhat attenuated upwards, with a distinct crustaceous outer layer ; internally white, externally purplish-red, pruinose ; springing from a sclerotium up to 8 cm. long and 4 cm. diameter, yellowish with red patches. A young specimen, pileus undeveloped, has a reddish stalk, covered with brown tomentum ; apex of stalk obconoid, yellow below, white above.

Fomes lucidus (Leys.) Fr.

2839, Mirigama, March, 1909; 3390, Maha Iluppallama, December, 1911; 3391, Kandy, January, 1912 (det. Lloyd); 4523, Peradeniya, February, 1915; 2979, Maha Iluppallama, August, 1909; 2927, Culloden, August, 1909 (det. Lloyd), &c.

One of our commonest species. Always stalked, but varying greatly in the length and breadth of the stalk. The thin-stalked forms, after the pattern of *P. rugosus*, are often found growing in bamboo clumps, and are called Una Bimmal, the bamboo fungus, by the Sinhalese. In the more massive forms the stalk is reduced to a broad base several inches in diameter, but only an inch or less in height. My largest specimen (3389, Peradeniya) measures 50 × 42 cm. Specimens 2927 from Culloden are exactly the shape of *Polyporus fornicatus;* they were dull red-brown, not shining, when fresh; stalk and pileus unicolorous.

Fomes Petchii Lloyd.

3238, Hakgala, May, 1910.

Specimen sent to Lloyd as "*Fomes lucidus* perennial." This form occurs at Hakgala (5,600 feet). The stalk is lateral, as in *Fomes lucidus* 2927 (see above). It differs from *F. lucidus* in being perennial, with a vertical ridged margin, exactly as *F. annularis* differs from *F. applanatus*.

Fomes applanatus Pers.

3751, Peradeniya, September, 1913; 3471, Hakgala, May, 1912; 2728, Hakgala, September, 1908; 2729, 2730, Peradeniya, October, 1908.

Extremely common and highly variable in shape. Stalked forms, matching *P. gibbosus* Nees, are frequent, but Nees' figure shows setæ in the pores (?).

Fomes annularis Lloyd.

This form occurs at Hakgala, the specimens being sometimes about 8 inches in diameter and a foot thick. We take it to be a stratose form of *F. applanatus*. *F. applanatus* is rarely stratose at lower elevations, but

at the top of the hills it is generally so. Even the large specimens become stratose there, as shown in Plate XII., Circular 10, Vol. V., Root Diseases of Acacia decurrens.

Polyporus cupreus Fr.

4700, Korossa, May, 1915 (det. Lloyd).

A thin form of *F. applanatus*.

Fomes pallidus n. sp.

2793, Colombo, February, 1909 ; 2840, Deviturai, April, 1908.

Resupinate ; in large patches, usually oval, up to 20 × 10 cm. ; lenticular in section, up to 6 mm. thick, stratose ; gray or pale slate-coloured, bleaching almost white when old. Margin thin, definite, tomentose, brownish-gray, blackening when old. Pores up to 0·15 mm. diameter, circular, dark brown in section, usually mottled with white ingrowths. Basal layer thin, dark brown, or absent.

This is a common species in the low-country. It is represented in Thwaites' collection by three pieces in Herb. Peradeniya included under *Polyporus epimiltinus* B. & Br.

Resupinato, stratoso, griseo, ætate pallescente ; margine tenui, limitato, tomentoso, brunneogriseo, ætate nigrescente ; poris rotundatis, ad 0·15 mm. diam., intus fuscobrunneo ; contextu tenui vel nullo, fuscobrunneo.

Poria.

Poria mellea B. & Br.

4021, Peradeniya, May, 1914 ; 4291, Peradeniya, November, 1914 ; 4535, Peradeniya, January, 1915.

Sulphur yellow, margin paler ; resupinate, spreading in circular or elongated patches, with a more or less orbicularly lobed margin ; context very thin ; margin adpressed, about 1 mm. wide, radially tomentose ; pores variable, generally large, dissepiments thin and toothed.

Poria interrupta B. & Br.

Poria vulgaris Fr., in B. & Br., Fungi of Ceylon, 498.

White, becoming buff or pinkish-buff, with a white byssoid margin, which appears pulverulent. Margin thin. Pores at first tomentose, becoming glabrous or nearly so, rigid, subhexagonal, 0·1–0·15 mm. diameter, with a few larger scattered pores up to 0·3 mm. Context thin, fibrous, white or yellowish; total thickness 0·5–1 mm. Frequently developing in small circular patches which subsequently become confluent.

Frequent on dead mango branches at Peradeniya. 3479, 3480, Peradeniya, May, 1912; 4224, Peradeniya, October, 1914; 4282, Peradeniya, November, 1914; 4668, Hakgala, April, 1915.

Poria Ravenalæ B. & Br.

2187, Peradeniya, February, 1907, &c.

Pale slate-gray, with a narrow paler or white margin; widely effused in patches up to 24 cm. long; very thin, total thickness up to 0·2 mm. Pores angular, 0·1–0·25 mm. diameter; dissepiments thin, rigid.

Common on dead petioles of palms, palm stems, &c. I have not seen it on *Ravenala*. It turns black when old, or when pickled with mercuric chloride in alcohol.

Poria Vaillantii Fr.

2235, Kandapola, May, 1906.

The Ceylon fungus spreads over rotten wood or bare ground by coarse white rhizomorphs, which expand and unite into sheets bearing the hymenium. These sheets are up to 7 cm. long and 3 cm. broad, and are completely covered with pores, except at the membranous edges. The pores are small, angular, with thin dissepiments when dry, and are up to 3 mm. deep. The whole fungus is white.

The Ceylon form appears to differ from the European species in its greater development of the hymenium. I have left it under Berkeley and Broome's name, as it is probable that *Poria leptoderma* will prove to be an immature form of the same thing.

Poria calcicolor Sacc. & Syd., Sylloge, XIV., p. 192.

Polyporus (*Resupinati*) *calceus* B. & Br., Fungi of Ceylon, 506.

Not found recently. Before examination with a lens it appears to be a *Corticium*. The specimens are now pale yellow to pale ochraceous, with a broad, white, powdery margin. The pores are subhexagonal, up to 0·2 mm. diameter, and 0·1 mm. deep, with thin dissepiments which here and there consist of separate erect fascicles of hyphæ. The subiculum is white, about 0·1 mm. thick.

Poria variolosa B. & Br.

4013, Hakgala, April, 1914.

The type specimen, Thwaites 650, is young and undeveloped ; it has broad shallow hexagonal pores, up to 0·75 mm. diameter. Specimens recently collected have more fully developed pores.

This species begins at different points as small circular patches which ultimately fuse. The ultimate sheets have, therefore, a much-lobed and irregular outline, and are frequently perforated with large angular holes, where the fusion has not been completed. The hymenium is cream-coloured or yellowish. The pores are at first hexagonal, large, up to 1 mm. diameter and 2 mm. deep, with thin dissepiments, but in the older parts long parallel linear pores are formed, involving several of the original hexagonal pores. The basal layer is very thin, but tough and flexible, and the whole fungus can be peeled away from the substratum. The lower surface is olive, minutely tomentose, with the individual points of origin clearly marked and often concentrically zoned round them.

Poria hypolateritia Berk.

Poria vincta Berk., in B. & Br., Fungi of Ceylon, 500 (in part).

2290, Lindula, August, 1906 ; 2292, Pattipola, October, 1906 ; 2293, Hakgala, April, 1906 ; 3620, Haputale, March, 1913 ; 3619, Kalupahana, 1912.

Pinkish-red, with a white radiating tomentose margin at first; basal layer thin, white, lower surface red or red-brown, horny. In old specimens the margin becomes the same colour and consistency as the basal layer. Pores medium, up to 0·2 mm. diameter, angular, dissepiments thin and rigid. Total thickness about 1 mm.

This species causes one of the commonest root diseases of tea in Ceylon. The affected roots are covered with red rhizomorphs and sheets of mycelium, which ultimately turn black. This is probably *Trametes theæ* Zimm.

Poria hypobrunnea n. sp.

Poria vincta Berk., in B. & Br., Fungi of Ceylon, 500 (in part).

Reddish-pink, becoming brownish-red when old; margin white, tomentose. Total thickness 1·5 mm. Basal layer blackish-brown, stout, constituting half the total thickness, firmly attached to the substratum. Pores small, 0·1 mm. diameter.

. 3930, Gangaruwa, December, 1913; 3974, Peradeniya, February, 1914.

This, when fresh, appears to be a small-pored form of *Poria hypolateritia*, but its basal layer is dark brown, without any trace of red, and not horny.

Subruber, ætate brunneo-ruber. Margine albo, tomentoso; circa 1·5 mm. crassitudine; contextu fuscobrunneo, crasso, matricem arcte applicato; poris parvis, 0·1 mm. diam.

Poria albobrunnea n. sp.

3184, Hakgala, May, 1910, on *Acacia decurrens*.

Watery and somewhat spongy when fresh; rigid and separating from the substratum when dry. Totally resupinate. White becoming yellowish-brown when dry. Sterile margin white, rather broad, minutely tomentose. Up to 3 mm. thick. Pores in section pale brown; basal layer stout, compact, blackish-brown, composed of interwoven yellow-brown hyphæ. Lower surface blackish-brown or olive, usually mottled.

strigose. Pores angular, about 0·1 mm. diameter; dissepiments thin, appearing somewhat horny and translucent when dry.

Albus, sicco flavobrunneus ; vivo aquosus, spongiosus, sicco rigidus matrice secernens. Margine albo, minute tomentoso, latiusculo ; usque 3 mm. crassitudine ; poris angulatis, ad 0·1 mm. diam., intus pallidobrunneo ; contextu crasso, compacto, fuscobrunneo ; inferiore fuscobrunneo, strigoso.

Poria gilvoides n. sp.

2884, Peradeniya, July, 1909, on a dead branch.

Resupinate, up to 16 cm. long, 2 cm. broad, yellow-brown, with a paler tawny margin, becoming ferruginous brown when old. Thickness about 1 mm. ; basal layer about 0·1 mm. thick, yellow-brown. Margin narrow, tomentose. Pores angular, 0·12–0·25 mm. diameter, dissepiments thin. No setæ.

Resupinato, ad 16 cm. long., 2 cm. lat., flavobrunneo, margine fulvo, ætate ferrugineobrunneo, ad 1 mm. crassitudine ; margine angusto, tomentoso ; poris angulatis, 0·12–0·25 mm. diam., dissepimentibus tenuibus ; contextu ad 0·1 mm. crassitudine, flavobrunneo.

Poria purpureogilva n. sp.

4688, Peradeniya, April, 1915, on a dead branch.

In patches up to 6 × 2 cm., grayish-purple ; margin purple-brown, subvertical, glabrous. Thickness about 1 mm. ; internally yellow-brown. Pores minute, rounded, about 0·1 mm. diameter. Basal layer up to 0·2 mm. thick, yellow-brown. Setæ in the pores, conical, or cylindric below and tapering above, acute, yellow-brown, 16–32 × 6 μ.

Griseo-purpureo ; margine purpureo-brunneo, glabro, subdirecto ; circa 1 mm. crass. ; intus flavobrunneo ; poris parvis, rotundatis, circa 0·1 mm. diam., setiferis, setis acutis, conicis, flavobrunneis, 16–32 × 6 μ ; contextu ad 0·2 mm. crassitudine, flavobrunneo.

Poria aquosa n. sp.

Poria vaporaria B. & Br., non Fr., Fungi of Ceylon, 497.

4810, Peradeniya, May, 1916, &c.

White, effused, covering dead trunks of trees for a length of several feet ; margin narrow and tomentose ; pores at first soft and watery, with thick dissepiments which become thin and rigid on drying, minute, angular when dry, up to 2 mm. long. Basal layer a thin weft of hyphæ, almost absent.

This is a much stouter species than *Poria vaporaria* to which Berkeley and Broome referred it. In drying it splits owing to the shrinkage of the hymenium. When growing on a vertical surface, the upper edge simulates a narrow dimidiate pileus, radially fibrillose, tomentose behind ; this is not evident on the shrunken dried specimens.

Albo ; margine angusto, tomentoso ; poris vivo mollibus aquosisque, dissepimentibus crassis ; sicco poris rigidis, minutis, ad 2 mm. long., dissepimentibus tenuibus ; contextu tenuissimo.

Poria glaucescens n. sp.

3653, Hakgala, May, 1913.

At first amber-brown (Ridgway) at the margin, pores darker ; becoming entirely greenish-gray when old. Margin slightly swollen, nodular, tomentose. Pores small, 0·1 mm. diameter, irregular, dark brown in section, up to 3 mm. long. Basal layer very thin, almost wanting. No setæ. Spores small, yellow brown, oval, 4 × 2 μ, or globose, 3 μ diameter.

Cracks when old and become reticulated with amber-brown tomentose lines, due to new growth through the cracks.

The small, coloured spores resemble those of *Fomes caryophylli*, but the colour of the fungus is different, and old patches, up to a foot in length, do not show any trace of the hard black margin which characterizes resupinate *Fomes caryophylli*. The specimens without setæ in Berkeley and Broome's *Fomes obliquus* from Ceylon are apparently this species.

Primo rufobrunneo, deinde glaucescente ; margine leniter incrassato, noduloso, tomentoso ; poris parvis,

irregularibus, 0·1 mm. diam., intus fuscobrunneo, ad 3 mm. long. ; contextu tenuissimo ; sporis minutis, flavobrunneis, ovalibus, 4 × 2 μ, vel globosis, 3 μ diam.

TRAMETES.

Trametes badia Berk.

3756, Moratuwa, September, 1913 (det. Lloyd) ; 4703, Korossa, May, 1915 (det. Lloyd).

Trametes cingulatum Berk.

3523, Peradeniya, July, 1912 (det. Lloyd) ; 3562, Sigiriya, August, 1912 ; 3301, Maha Iluppallama, January, 1912 (det. Lloyd) ; 3398, Mirishena, February, 1912 ; 3602, Peradeniya, December, 1912 ; 3852, Peradeniya, November, 1913 (det. Lloyd) ; 4751, Colombo, July, 1915.

Trametes lævis Berk.

Not re-identified. It appears to be a form of *T. lactinea* with rather large pores.

Trametes lactinea Berk.

2676, Peradeniya, October, 1908 ; 3302, Peradeniya, December, 1911 ; 3531, Peradeniya, July, 1912 ; 2733, Peradeniya, July, 1908 ; 3550, Peradeniya, August, 1912 ; 2768, Peradeniya, January, 1909 ; 2767, Gangaruwa, January, 1909.

Trametes ochroleuca Lév.

Trametes colliculosa Berk., Hook. Lond. Jour. Bot. (1847), p. 506 ; *Trametes rugosa* B. & Br., Fungi of Ceylon, 511 ; *Trametes læticolor* Berk., Ann. Nat. Hist., X., p. 374 ; *Dædalea pavonia* Berk., Hook. Lond. Jour. Bot. (1847), p. 507.

2766, Gangaruwa, January, 1909 ; 3591, Peradeniya, December, 1912 (det. Lloyd) ; 3592, 3593, Glassel estate, December, 1912 (det. Lloyd) ; 3610. Gangaruwa, January, 1913 ; 3612, Pusella, January, 1913 ; 2978, Maha Iluppallama, September, 1909.

Abundant.

Trametes versatilis Berk.

Polyporus venustus Berk., in B. & Br., Fungi of Ceylon, 477 ; *Irpex colliculosus* B. & Br., Fungi of Ceylon, 555

2189, Ruanwella, July, 1906; 2928, Culloden, August, 1909; 3627, Diyagama, January, 1912.

Trametes dubius Berk.

Polyporus dubius Berk., Ann. Mag. Nat. Hist., X., pp. 369–384.

3315, 3316, Pallegodda, January, 1912; 3590, Lagos estate, December, 1912.

White with gray zones, or grayish-brown with darker zones. Shortly stalked or almost sessile, flabelliform, up to 7 × 5 cm. Minutely tomentose; feebly concentrically sulcate. Up to 7 mm. thick, margin usually thin; context ochraceous. Pores medium, irregular; hymenium with a narrow sterile margin.

Trametes occidentalis Kl.

Polyporus hirsutus Fr., B. & Br., Fungi of Ceylon, 480; *Trametes occidentalis* Fr., B. & Br., Fungi of Ceylon, 514; ? *Polyporus nigrocinctus* Berk., Ann. Mag. Nat. Hist., X., pp. 369–384.

2181, Kegalla, July, 1906; 2268, Kegalla, June, 1906; 3544, Hakgala, May, 1912 (det. Lloyd); 3829, Peradeniya, October, 1913; 3625, Diyagama, January, 1913 (det. Lloyd).

Abundant.

Trametes lutescens Pers.

4459, Hakgala, January, 1914 (det. Lloyd).

Trametes polyzonus Pers.

4460, Hakgala, January, 1914 (det. Lloyd).

Trametes Persoonii Fr.

3320, Peradeniya, January, 1912; 3493, Peradeniya, June, 1912; 4249, Peradeniya, November, 1914; 2525, Ritigala, July, 1907, &c.

Abundant.

Trametes cervinus Pers.

3643, Hakgala, May, 1913 (det. Lloyd); 3886, 4042, 4043, all Hakgala.

Common at Hakgala on dead stumps of *Acacia decurrens*.

Trametes dermatodes Lév.

Polyporus Peradeniæ B. & Br., Fungi of Ceylon, 478.

2813, Hakgala, September, 1908 ; 3021, Peradeniya, November, 1909 ; 3435, Hakgala, May, 1912 ; 4099, Gangaruwa, January, 1914 ; 4250, Peradeniya, October, 1914 (det. Lloyd).

Trametes serpens Pers.

Polyporus Stephensii B. & Br., Fungi of Ceylon, 503.

4687, Peradeniya, April, 1915.

DÆDALEA.

Dædalea subsulcata B. & Br.

2354, Hakgala, April, 1907 ; 3062, Hakgala, May, 1910.

HEXAGONIA.

Hexagonia sulcata Berk.

Not recently collected.

Hexagonia apiaria Pers.

2921, Maha Iluppallama, August, 1909 ; 3409, Haputale, March, 1912 (det. Lloyd) ; 3566, Sigiriya, August, 1912 (det. Lloyd).

Common in the dry zone, and ascending the hills on that side.

Hexagonia Burchelli Berk.

3494, Hakgala, May, 1912 ; 4056, Hakgala, April, 1914 ; 4716, Hakgala, April, 1915 (det. Lloyd).

Thin and leathery, several inches in diameter, under surface glaucous, when in moist situations ; becoming thick-stalked, cornucopioid, with ferruginous pores, in drier places.

Hexagonia Deschampsii Hariot.

3409 bis, Haputale, March, 1912 (det. Lloyd).

Hexagonia discopoda Pat.

2229, Peradeniya, March, 1907, &c. ; 2379, Hakgala, March, 1907 ; 2807, Hakgala, September, 1908 ; 2262, Elston, April, 1906 ; 3562, Sigiriya, August, 1912 ; 2920, Maha Iluppallama, August, 1909 ; 3383, Undugoda, February, 1912 (det. Lloyd) ; Ritigala, March, 1905.

The common Ceylon Hexagonia.

Hexagonia pulchella Lév.

2925, Peradeniya, July, 1909.

Hexagonia tenuis Hook.

3840, Peradeniya, July, 1913; 4275, Peradeniya, October, 1914.

Hexagonia ruficeps (B. & Br.), comb, nov.

Favolus ruficeps B. & Br., Fungi of Ceylon, 527.

3484, Peradeniya, June, 1912; 3491, Peradeniya, June, 1912; 3558, Peradeniya, August, 1912.

Pallid to pale reddish-brown, with rufous radiating streaks when fresh, dark red-brown when dry; flabelliform, up to 5 × 3·5 cm. Stalk up to 1 cm. long, stout, sometimes affixed to the substratum by a tomentose disc. Upper surface scabrous with minute fascicles of brown tomentum. Pores hexagonal, large; walls sparsely setulose with minute, black, conical setæ. Margin of pileus fimbriate; pores descending to the base of the stalk. Pileus not tessellated.

This appears to be Hexagonia and will stand as *Hexagonia ruficeps*. Thwaites' figure, referred by Berkeley and Broome to *Favolus tessellatus*, is good.

Hexagonia scabra (B. & Br.), comb. nov.

Favolus scaber B. & Br., Fungi of Ceylon, 532.

2270, Peradeniya, December, 1906; 2749, Peradeniya, December, 1908; 4241, Peradeniya, November, 1914.

Flabelliform, shortly stalked, pale yellow-brown. Upper surface tessellated, radially silky, sometimes scabrid behind; margin fimbriate. Stalk frequently arising from a circular tomentose base. Pores large, hexagonal, up to 5 mm. long and 4 mm. deep, decurrent on the stalk, cream-coloured; no setæ. Spores white, narrow-oval, 10–12 × 3 μ. Flesh very thin.

This is also Hexagonia, and will stand as *Hexagonia scabra*.

This and another Hexagonias, which grow on dead branches attached to the tree, are usually collected after the branches have fallen. In that case, especially in wet weather, if the branches have been lying on the

ground for some time, it will often be found that the normally straight edges of the pores are lacerated, and frequently bear irregular horizontal teeth.

Hexagonia Miquelii Mont.

Favolus tessellatus Mont., in B. & Br., Fungi of Ceylon, 531.

3490, Peradeniya, June, 1912 ; 4153, Peradeniya, October, 1914.

Frequent at Peradeniya. At first white, then red-brown. Subcartilaginous, as shown by the undulating margin when dry.

FAVOLUS.

Favolus multiplex Lév.

Favolus multiplex Lév., in B. & Br., Fungi of Ceylon, 530 ; *Favolus brasiliensis* Fr., in B. & Br., Fungi of Ceylon, 528 ; *Favolus Friesii* B. & C., in B. & Br., Fungi of Ceylon, 529.

2942, Peradeniya, September, 1908 ; 4628, Peradeniya, 1914.

I do not know the correct name of this species, and have left it under the name assigned by Berkeley and Broome to the drawing of it. It is a common species at Peradeniya and grows in large troops.

Flabelliform, frequently lobed, up to 8 × 5 cm. ; stalk usually short, almost absent ; white, tomentose behind, glabrous in front, radially streaked when moist ; texture tough, lentinoid ; flesh white, thin, about 1 mm. thick. Pore layer about 2 mm. thick ; pores decurrent to the base of the stalk, hexagonal, radially elongated, up to 2 mm. long, 0·5 mm. broad, edges regular. Spores white, narrow-oval, 6–8 × 3 μ.

Thwaites' figure is good. In wet weather it is soft but tough, and dries somewhat translucent, especially towards the margin ; in drier weather it is firmer, and dries pale brown. Though appearing readily putrescent, it dries and revives, new growth occurring along the edges of the pores, so that they become lacerated. It has a somewhat fishy smell when fresh.

Ceylon Lentini.

BY

T. PETCH, B.A., B.Sc.

WHEN König visited Ceylon in 1777–81, he gathered, among other fungi, a *Lentinus*, which Berkeley, sixty years later, assigned to *Lentinus connatus* (Ann. Nat. Hist., X. (1842), pp. 369-384), the latter being a Philippine species which Berkeley had recently described. Specimens of this gathering are in the herbaria of the British Museum and Kew, and these support Berkeley's identification.

In the collection sent from Ceylon by Gardner, and described by Berkeley in Decades of Fungi, XV.-XIX. (Hook. Lond. Jour. Bot., VI., pp. 479–514), there were five white *Lentini*, viz., *L. revelatus* n. sp., *L. subnudus* n. sp., *L. pergameneus* Lév., *L. inconspicuus*, and *L. exilis* Klotzsch.

The type of *L. revelatus*, Gardner 117, Herb. Kew, is *L. connatus*. *L. subnudus*, Gardner 116, type in Herb. Kew, had not been previously described from Ceylon. The specimens assigned to "*L. pergameneus*," now in Herb. Kew, are *L. subnudus*. *L. inconspicuus*, "Talagalla, Gardner," without any number, type in Herb. Kew, is also *L. subnudus*. Gardner 107, two sheets in Herb. Kew, said to be allied to *L. anthocephalus*, but injured by insects, is, as far as can be determined, *L. subnudus*. The specimens assigned to *L. exilis* Klotzsch, Gardner 67 and 81, are in each case identical with *L. sajorcaju* Fr.

Twenty years later, Berkeley and Broome examined and described the large collection forwarded by Thwaites. They found only one of the six species previously recorded, viz., *L. exilis*, but they described as new the following closely allied species, *L. velatus*, *L. multiformis*, *L. cretaceus*, *L. infundibuliformis*, *L. manipularis*, *L. lobatus*, and *L. apalus*. It will be convenient to consider these under Thwaites' numbers.

L. velatus is Thwaites 1057. From the figure and specimen it was evidently quite immature, the pileus having just begun

to expand. Comparison with specimens recently collected leaves no doubt that this is immature *L. connatus*.

Thwaites 206 furnished *L. cretaceus*, *L. manipularis*, and *L. lobatus*. There was apparently an abundance of specimens. In Herb. Kew, under *L. cretaceus*, are to be found specimens labelled " 206 *L. cretaceus* B. & Br. *subnudus* B. Central Province, common," others marked " 206 *Lentinus subnudus* var. *cretaceus* B. & Br. Ceylon, G. H. K. T., Nov., 1867," and others, " 206, cream-coloured, Peradeniya, &c." ; all these are *Lentinus subnudus*. The type of *Lentinus lobatus* in Herb. Kew is a single specimen on a sheet of five, the sheet being marked " 206, *Lentinus subnudus* var. *cretaceus* " ; the specimen is merely a lobed example of *L. subnudus*. *L. manipularis*, type in Herb. Kew, is *L. subnudus*. The examples of Thwaites' 206 in Herb. British Museum and Herb. Peradeniya are all *L. subnudus*.

Thwaites 725 was accompanied by an excellent drawing. It was divided by Berkeley and Broome into two species, *Clitocybe candicans* Pers. and *L. apalus* (" *hapalus* " in Saccardo). The figure was named *Clitocybe candicans*, but the note on the specimens, " tender, white, with the pileus perfectly smooth and shining," was included in the description of *L. apalus*. In the type of *L. apalus*, in Herb. Kew, one cluster of small *Lentini*, growing on wood, has been marked by Berkeley, " excl. *L. manipularis* B. & Br." ; these are *L. manipularis*, *i.e.*, *L. subnudus*. The remainder of the type of *L. apalus* grew on the ground, and they are identical with the specimens assigned to " *Clitocybe candicans* " ; this is a *Clitopilus*.

Thwaites' 609 was divided into *L. multiformis*, *L. infundibuliformis*, and *L. exilis*. In Herb. Kew the type of *L. infundibuliformis* is *L. connatus*, and the same is true of the co-type in Herb. British Museum. The part of Thwaites 609 assigned to *L. exilis* in Herb. Kew is *L. sajor-caju*. The type of *L. multiformis* in Herb. Kew contains two specimens, one old and dilapidated, the other in better condition ; these are *L. subnudus*. In Herb. Peradeniya Thwaites 609 is represented by one sheet bearing five specimens, labelled " *L. exilis*, *L. multiformis*, &c." ; three of the specimens are *L.*

connatus, the remaining two being probably *L. sajor-caju*. It may be noted that *L. multiformis* was described from the painting which accompanied the specimens. The painting is marked by Thwaites, "No. 609, small, poor specimen." It is certainly not *L. connatus*, but probably *L. sajor-caju*; it was drawn from one of the doubtful specimens at Peradeniya.

Of the unnumbered Ceylon specimens in Herb. Kew, one, *ex* Herb. Hooker and probably of Gardner's collection, *sub L. exilis*, is *L. sajor-caju*; another "Ceylon G. H. K. T." *sub L. subnudus*, marked by Berkeley, "*L. subnudus* B., *inconspicuus*," is *L. subnudus*.

We have therefore three species under the following names :—

A.	B.	C.
L. connatus B.	L. subnudus B.	L. exilis Kl.
L. revelatus B.	L. pergameneus Lév.	L. multiformis B. & Br.
L. velatus B. & Br.	L. inconspicuus B.	
L. infundibuliformis B. & Br.	L. anthocephalus Lév.	
	L. cretaceus B. & Br.	
	L. manipularis B. & Br.	
	L. lobatus B. & Br.	

According to Bresadola (Ann. Myc., IX., p. 549), *L. infundibuliformis* is identical with *L. javanicus* Lév.

I have not inquired into the question of nomenclature beyond ascertaining the synonymy of the Ceylon records. For the present, A is included in Ceylon lists as *L. connatus* Berk., with the other three names as synonyms. *L. subnudus* Berk. is adopted for the second species, with four Ceylon synonyms; whether this species is identical with *L. pergameneus* or *L. anthocephalus* must be decided elsewhere. C is *Lentinus sajor-caju*, of which, judging from the figure from which the description was drawn up, *L. multiformis* is a synonym. I have not seen the type of *Lentinus exilis* Klotzsch.

Of the other specimens collected by Gardner, *L. giganteus* B., *L. stenophyllus* B., *L. obnubilus* B., and *L. maculatus* B., are the same species (see Ann. Perad., IV., p. 406). This

species has a long rooting base, and when sent by Thwaites was re-named *L. radicans* B. & Br. (see Ann. Perad., V., p. 273).

The specimens collected by Thwaites and assigned by Berkeley and Broome to L. *blepharodes* B. & C. are not that species, but are identical with *L. similis* B. & Br. Similarly, the Ceylon specimens assigned to *L. badius* are *L. similis* B. & Br., and differ from the original *L. badius* from the Philippines (see Ann. Perad., V., p. 274).

Gardner 18 assigned to *L. strigosus* Fr., and Gardner 1 and 13, named *L. Lecomtei* Fr., are the same species. When sent by Thwaites, this species was again attributed to *L. Lecomtei*. It seems to be now generally held that this species is identical with *Panus rudis*, but this determination would appear doubtful.

L. cartilagineus B. is identical with *Collybia albuminosa* (Berk.) Petch. *L. percomis* B. & Br. is distinct from all the other Lentini recorded from Ceylon.

From the herbarium specimens, *L. eximius* B. & Br. is identical with *L. estriatus* B. & Br. There is another collection of the same species in Herb. Kew labelled *Lentinus Thwaitesii* B. & Br. by Berkeley ; apparently this name was never published.

There is apparently no type specimen of *L. zonifer* B. & Br. either in Herb. Kew or in Herb. British Museum. Herb. Peradeniya contains both *L. zonifer* B. & Br. and the Ceylon specimens attributed to *L. Hookerianus* B. These were part of the same Thwaites' number, 532, and are the same species. It appears to be *L. Hookerianus*.

Lentinus giganteus Berk., Decades of Fungi, 162.

L. stenophyllus Berk., Hook. Lond. Jour. Bot. (1847), p. 495 ; *L. obnubilus* Berk., *loc. cit.*, p. 495 ; *L. maculatus* Berk., *loc. cit.*, p. 494 ; *L. radicans* B. & Br., Fungi of Ceylon, 416.

When unexpanded, wholly black, except the subterranean rooting base, the convex pileus covered with scattered black fibrillose scales. Universal veil black, remaining attached in fragments to the margin for some time. When expanded, typically infundibuliform, up to 30 cm. in diameter and 28 cm. high, rarely plane, sometimes campanulate. Pileus ochraceous or yellow-brown, covered with blackish-brown squamules,

densely in the centre, scattered and concentrically arranged elsewhere. In addition to these scales, which are formed by the splitting of the cuticle of the pileus, there is usually a regular ring of large, black, superficial, flattened, polygonal warts, representing the remains of the veil, midway towards the margin. Margins striatosulcate. Flesh white, spongy, thin, except over the stalk. Stalk equal, 1-2 cm. diameter, or expanding upwards, 1·5–3 cm. diameter at ground level, 2–5 cm. at the ends of the gills, densely velvety with brown, or blackish-brown, short tomentum, outer layer cartilaginous, internally white and spongy, 3·5–12 cm. high. Gills white, then cream-coloured, decurrent, not crowded, rather broad (up to 13 mm.), attenuated outwards, sometimes anastomosing; the tomentum of the stalk extends partly along the edges of the gills. Spores white, broadly oval, 6–8 × 5–6 μ, or globose, 6–7 μ diameter.

On the ground among grass, arising from buried wood at a depth of 8 inches or more below the surface.

Lentinus sajor-caju Fr., Epicr., p. 393.

Lentinus exilis Kl. in B. & Br., Fungi of Ceylon, 401; *L. multiformis* B. & Br., Fungi of Ceylon, 404.

Pileus at first gray, mottled with gray-brown patches, becoming pale ochraceous, grayish in the funnel, often spotted with red-brown when fully expanded in wet weather, but uniformly brown or grayish-brown in drier weather; faintly radially fibrillose, becoming glabrous, depressed, then strongly infundibuliform, thin, tough, margin incurved, entire or lobed. Up to 11 cm. diameter. Gills white, then ochraceous, narrow (1 mm.), crowded, decurrent, their faces covered with erect obclavate processes, 60–80 μ high, 20-30 μ diameter, composed of fasciculate hyphæ. Stalk short and stout, about 2 cm. high, 5 mm. diameter, at first white, longitudinally striate, with a thick, broad, fleshy decurved ring, triangular in section, which usually disappears, leaving the stalk irregularly fibrillose or squarrose.

On a decaying erect tree trunk, Peradeniya. This species is not common at Peradeniya, where I have only once collected it. A thick, leathery, white layer was present between the bark and the wood, and the majority of the specimens arose

from this layer and forced their way through cracks in the bark. The stout ring, the remains of a universal veil, soon disappears, being apparently eaten off by insects. When the fungus begins to dry *in situ*, it turns yellow-brown, the discolouration extending from the margin inwards ; at the same time it shrinks and becomes semitranslucent, horny, and radially striate ; the stalk also shrinks and becomes glabrous, longitudinally ridged, and black. Specimens gathered and dried when recently expanded appear quite different from these old, naturally dried examples. Young, partially expanded specimens do not appear to have any processes on the gills.

Lentinus connatus Berk., Hook. Lond. Jour. Bot., I., p. 145.

Lentinus revelatus Berk., Decades of Fungi, 160 ; *L. velatus* B. & Br., Fungi of Ceylon, 403 ; *L. infundibuliformis* B. & Br., Fungi of Ceylon, 406.

Cæspitose ; deeply infundibuliform, up to 20 cm. high and 18 cm. diameter, cream-coloured or pale ochraceous, often blackish at the base of the funnel, sometimes radially streaked gray, minutely tomentose or scurfy, glabrous towards the margin, sometimes dotted with minute black points ; flesh thin. Gills decurrent, crowded, very narrow (1–2 mm.), white, then cream-coloured. Stalk usually long, up to 1·6 cm. diameter, clothed with woolly tomentum, which is at first white, becoming gray or sometimes blackish, the tomentum usually extending along the edge of the gills. Spores white, oval, 5–8 × 3–3·5 μ.

Common on logs and stumps, Peradeniya, &c.

Lentinus subnudus Berk., Decades of Fungi, 161.

Lentinus inconspicuus Berk., Decades of Fungi, 164 ; *L. cretaceus* B. & Br., Fungi of Ceylon, 405 ; *L. manipularis* B. & Br., Fungi of Ceylon, 407 ; *L. lobatus* B. & Br., Fungi of Ceylon, 417 ; *L. pergameneus* Lév., in Berkeley, Decades of Fungi, inter 161 et 162 ; *L. anthocephalus* Lév., in Berkeley, Decades of Fungi, inter 161 et 162.

Cæspitose ; up to 8 cm. diameter and 7 cm. high, infundibuliform, margin usually regularly decurved, white, clothed with closely adpressed scales, or squarrose ; in drier weather sometimes gray ; flesh thin. Gills rather crowded, broad

(up to 3 mm.), decurrent, edge naked. Stalk white, blackening at the base, about half the total height of the fungus, up to 5 mm. diameter, usually squarrose, sometimes almost smooth. Spores white, narrow oval, 6–9 × 2–3 μ.

Common on logs and stumps at Peradeniya and in the low-country.

Lentinus percomis B. & Br., Fungi of Ceylon, 402.

Up to 7 cm. diameter and 7 cm. high, infundibuliform, feebly radially sulcate, at first purple or reddish-purple, becoming pale ochraceous or cream-coloured, glabrous, margin ciliate or almost naked. Gills decurrent, purple, then cream-coloured, moderately broad, rather distant. Stalk up to 2 cm. high, 6 mm. diameter, clothed with spongy tomentum, or minutely scurfy-tomentose.

Hakgala, on fallen trunks, fairly common.

Lentinus Lecomtei Fr., Epicr., p. 368.

Centrally stalked, deeply infundibuliform to almost plane, or laterally stalked, orbicular to reniform, usually growing in tufts, connate at the base. Pileus up to 11 cm. diameter; at first violet or violet-purple, becoming brown, yellow-brown, or pale ochraceous; densely clothed with erect hairs which form fasciculate spine-like tufts at the margin; margin regular or lobed. On young examples, the hairs are white, but become yellow-brown later. Gills decurrent, violet then pale ochraceous, crowded, rather broad (up to 3 mm.). Stalk usually short and stout, about 1 cm. long, and 6–8 mm. diameter, densely strigose. Spores oval, 6–7 × 3 μ, faintly yellow.

Common at Peradeniya on decaying stumps.

Lentinus Hookerianus Berk., Decades of Fungi, 322.

Lentinus zonifer B. & Br., Fungi of Ceylon, 413.

Up to 5 cm. diameter, and 7 cm. high. Infundibuliform, sometimes lobed, covered with erect bristly fascicles of brown hairs, chocolate-brown. Gills at first purple, then pallid, finally brown, dark when dry, crowded, very narrow, decurrent. Stalk comparatively long and thin, up to 5 cm. high, 4 mm. diameter, clothed as the pileus. Spores white, oval, 5–6 × 3–3·5 μ.

On stumps and fallen logs, Peradeniya, Gallawatta, &c. The form named *L. zonifer* is concentrically depressed or

zoned ; this is due to the temporary arrest of the expansion of the pileus owing to changes in the weather. This species frequently splits to the centre when pressed.

Lentinus similis B. & Br., Fungi of Ceylon, 409.

L. blepharodes B. & C., in B. & Br., Fungi of Ceylon, 408 ; *L. badius* Berk., in Decades of Fungi, inter 159 et 160.

Amethyst or violet when young, becoming pale brown to red-brown when old. Pileus up to 8 cm. diameter, deeply infundibuliform, edge decurved or plane, regularly plicato-sulcate to the centre, coarsely velvety with short close-set hairs, which are often grouped into tufts within the funnel, margin regular and fimbriate. Total height up to 14 cm. Stalk long, straight, equal, expanded at the base, clothed with long silky hyphæ entangled in a spongy mass. Gills decurrent, narrow, rather distant, violet, then cream-coloured, finally brown. Spores white, narrow-oval, or oblong-oval, 5–7 × 3–3·5 μ.

On dead wood, usually scattered.

Lentinus eximius B. & Br., Fungi of Ceylon, 415.

L. estriatus B. & Br., Fungi of Ceylon, 418.

Not collected recently ; apparently the same texture as *L. similis*, but even, and shortly stalked ; the gills dry very dark.

Revisions of Ceylon Fungi.

(PART IV.)

BY

T. PETCH, B.A., B.Sc.

107.—*Panus melanophyllus* Fr.

IN "The Fungi of Ceylon" Berkeley and Broome recorded "*Xerotus Bertierii* Mont." on dead wood, Hakgala, and *Xerotus lateritius* B. & C. on dead wood, Peradeniya, February, 1869; and Beccari, when passing through Ceylon, gathered a fungus, for which Cesati instituted the new genus *Anthracophyllum*, the species being *A. Beccarianum*.

Cesati's genus was characterized as follows:—"Genus Marasmius affine, hymenio extus intusque nigrescenti, lamellis arescentibus, exsiccatione immutatis et ipsi cultro duris corneis. Pileus suborbicularis sessilis, vix pollicaris diametri, sat explanatus, supra sulcatus (more Schizophylli) fulvellus adustus et fere pulverulentus; lamellæ distantes, acie acuta, integerrimæ, inæquales, 2–3 mill. latæ, attingentes, ad centrum attenuatæ."

In Fungi Macowaniani (Grevillea, IX., p. 137), Kalchbrenner adopted Cesati's genus and species, but changed the name to *Anthracophyllum nigrita* on the ground that Cesati's *Anthracophyllum Beccarianum* was identical with *Xerotus nigrita* Lév. He gives the synonymy *Anthracophyllum nigrita* (Lév.) Kalch. = *Panus melanophyllus* Fr. = *Xerotus nigrita* Lév. = *Anthracophyllum Beccarianum* Ces. It had been previously stated by Fries (Novæ Symbolæ Mycologicæ, p. 41) that if the specimen supplied to him was authentic, *Xerotus nigrita* Lév. was not different from *Panus melanophyllus*.

According to Kalchbrenner, the spores were black, and therefore the fungus could not be included under *Panus* or *Xerotus*; the pileus was "sulcis parallelis, ad modum Schizophylli in lobos radiantibus ornatus."

The specimens of *Xerotus lateritius* and *X. Berterii* from Ceylon, in Herb. Kew, bear the same Thwaites' collection number, 393, not consecutive numbers as given in the Fungi of Ceylon. There is no difference between them ; both agree with the common Ceylon species.

Kalchbrenner's type of *Anthracophyllum nigritum* from Natal, which is also in Herb. Kew, does not show any points of difference from the Ceylon species. Under the same name, in Herb. Kew, there are twelve specimens from Natal (J. M. Wood) ; four specimens, Perrottet, 627 ; two specimens Perrottet, Manila ; and specimens from Cuba (Wright). These all agree with Kalchbrenner's type, but there is another gathering under the same name from South Carolina, " 892 and 917," which may be a different species. The Kew herbarium also contains a specimen of *Panus melanophyllus* from Fries which agrees with *Anthracophyllum nigritum*.

It would appear, therefore, that Kalchbrenner's synonymy is correct as far as regards *Anthracophyllum nigritum* and *Panus melanophyllus*. It is not clear how he arrived at the inclusion of *A. Beccarianum*, but it is quite certain that our common Ceylon species is identical with his *Anthracophyllum nigritum*. Moreover, the Ceylon species attributed to *Xerotus lateritius* and *Xerotus Berterii* are the same thing. In Herb. British Museum *X. lateritius*, *X. Berterii*, and *X. viticola* are apparently all the same species.

As far as Ceylon is concerned, therefore, the three names *Xerotus lateritius*, *X. Berterii*, and *Anthracophyllum Beccarianum* refer to the same species, which is identical with *Panus melanophyllus* Fries. This fungus is very common in jungles, especially in the hills, where it grows in abundance on dead twigs and branches. At first it is brownish-red or brick red above, paler towards the margin, which is strongly incurved in the early stages. The under surface is at first cinnabar, subsequently changing to violet, then purple, and finally black. It is soft and pliable, like kid leather, when young, but becomes rigid and brittle when old. In shape it is orbicular or reniform, up to 3 cm. broad, at first campanulate, then almost plane, shortly stalked, the stalk eccentric, black-brown, minutely tomentose, with a cushion of tawny hyphæ at the

base. The surface of the pileus is radially sulcate, the margin straight or lobed. The gills are distant, thin, sharp-edged, becoming rigid when old, of the same colour as the lower surface of the pileus; the interstices are usually smooth. The spores are white and oval; measurements on one set of specimens from Hakgala (5,600 feet) gave 5–8 × 3–4 μ; on another set from the same locality, 10–11 × 7 μ.

The genus *Anthracophyllum* is popularly supposed to include species with split gills and black spores. It has, however, been known for some time that the specimens attributed to *Anthracophyllum* in herbaria had white spores; in Herb. Kew, for example, the specimens are marked by Massee, "spores white." The idea that the gill edge was split may have been derived from Cesati's comparison with *Schizophyllum*, but there is no resemblance whatever to the latter genus; the gill edges are acute and entire. In herbarium specimens the edge of the rigid gills is often broken by pressure, and this might give rise to the impression that it was split or channelled. But on the fresh specimens there is nothing to warrant a reference to *Schizophyllum* or *Xerotus*. The species is a *Panus*, and must be known as *Panus melanophyllus* Fr.

It may be noted that alcohol extracts a vivid red-brown colour; and in herbaria in which the specimens are preserved by an alcoholic solution, this species usually betrays its location by the intense red-brown stains on the covers.

108.—Hydnum mucidum P.

This species was recorded for Ceylon by Berkeley and Broome, Fungi of Ceylon, 547. The collection on which they based the record, Thwaites 382, is in Herb. Kew and Herb. Peradeniya. Examination of fresh specimens shows that it bears a general resemblance to *Hydnum mucidum* only when dry.

The species is totally resupinate, and spreads over the substratum in irregular broken patches. The subiculum is very thin, white or pallid, tomentose at the margin. The colour of the whole fungus is pallid to pale brown. It usually grows on a subvertical surface, and the spines curve downwards; they are up to 12 mm. long, and 1 mm. diameter,

moderately distant, terete or slightly laterally compressed, acute, sometimes forked, sometimes bearing lateral protuberances, subcartilaginous, pale brown with white tips, becoming purplish and subtranslucent when old. It may be named *Hydnum pseudomucidum*.

109.—Marasmius coronatus Petch.

The species described and figured in Ann. Perad., VI., pp. 56–58, Pl. V. 1, as *Marasmius coronatus* n. sp. proves to be *Marasmius actinophorus* B. & Br. We have no part of the type specimen of *M. actinophorus* in Herb. Peradeniya, but we have the original painting. From the latter it had been supposed that *M. actinophorus* was an expanded, weathered specimen of *M. Thwaitesii*. Examination of the type at Kew shows that this was a mistake. There is only one specimen in the type, and that very small and collapsed, but an examination of the structure of the hairs on the pileus proves that it is the same as *M. coronatus* and distinct from *M. Thwaitesii*.

The painting is a very poor one, because it attempts to show a very small specimen, life size. Hence it gives no indication of the radial fascicles of hyphæ on the pileus. Massee's figures of *M. actinophorus* in Cooke's Illustrations, Pl. 1136, do not resemble the Ceylon fungus or painting ; they presumably represent the British *Marasmius* assumed to be this species. They are sufficient to demonstrate that the British species is not *M. actinophorus* B. & Br., and, indeed, the description in Massee's Fungus Flora, Vol. III., p. 172, refers to something quite different from the Ceylon plant. I did not find these British specimens in Herb. Kew.

110.—Corticium flavo-rubens B. & Br.

This species is not uncommon on the dead bark of decaying trees at Hakgala. It forms small patches, usually irregularly oval, up to about 8 mm. in diameter and 0·5 mm. thick, powdery, usually with a definite rounded margin, which is slightly tomentose. At first these patches are bright yellow, but they become orange-yellow owing to the development of a large number of minute red-brown bodies on or near the surface. Internally the colour is white.

The tissue of the fungus is composed of fine interwoven hyphæ, 1–2 μ diameter, roughened with copious deposits of calcium oxalate. The red-brown bodies which appear in the upper layer are oval or irregular, up to 24 × 20 μ; they are amorphous, not cellular. This fungus has been under observation for several years, but no spores or basidia have been observed. It has not, therefore, been possible to confirm Berkeley and Broome's reference of this species to *Corticium*.

Corticium flavo-rubens was described by Berkeley and Broome in Fungi of Ceylon, 647 (Thwaites 437). In 602 of Fungi of Ceylon they recorded *Stereum sulphureum* Fr. (Thwaites. 437). The Ceylon specimens in the cover of the latter species in Herb. Kew are identical with *C. flavo-rubens*. The packet of duplicates was first marked *Corticium flavo-rubens*, and this crossed out and *Stereum sulphureum* substituted. There is another Ceylon specimen of the same thing, Thwaites 134, also marked *Stereum sulphureum* by Berkeley. This species is probably the basis of the record of "*Corticium sulphureum* Fr., Hakgala, Ceylon," in Saccardo. It was cited by Massee as *Stereum strumosum* Fr., in Mon. Thelephoreæ.

111.—Corticium peroxydatum B. & Br.

This was described by Berkeley and Broome in Fungi of Ceylon, 633, as "Resupinatum, immarginatum, inæquabile, læve, subtiliter pulverulentum, martianum, intus cinnabarinum (270)." It was transferred by Massee to *Coniophora* (Jour. Linn. Soc., XXV., p. 136). The type in Herb. Kew is a developing *Hypoxylon*, and has been so marked by E. A. Burt. On cutting into the fungus the black stroma of the *Hypoxylon* is found beneath the outer coloured layer.

112.—Stereum acerinum Fr.

This species was recorded for Ceylon by Berkeley and Broome in Fungi of Ceylon, 603. The specimens, at least in part, are now in Herb. Peradeniya. They consist of pieces of bark, not dead wood as stated by Berkeley and Broome, which bear numerous white patches. These patches are irregularly circular or oval, elevated, with a definite rounded margin. They are up to 4 mm. in diameter and 1 mm. in

thickness. The surface appears powdery, and when lightly rubbed the white upper layer comes off, leaving a pale brown surface.

These patches occur in up-country jungles on the bark of living trees, the underlying tissues of which appear quite healthy. The species of tree has not been determined. A longitudinal section of a patch shows that the basal portion is composed of parenchymatous cells arranged in concentric layers round a central point. In some fresh specimens this structure continues almost to the periphery, but in the old herbarium specimens it is succeeded by a zone of partly disorganized tissue. The whole of this stains yellow-brown with chlorzinc iodide. Here and there occurs a solitary sclerenchymatous cell, which stains pink with phloroglucin and hydrochloric acid.

The white external layer consists of a mass of amorphous granules. These dissolve in sulphuric acid without effervescence, and crystallize out in bundles of needle-shaped crystals on the slide. They are evidently composed of calcium oxalate.

There is apparently no evidence of any *Corticium* in the structures in question. They appear to be a bark formation analogous to that of lenticels, with an external covering of calcium oxalate.

113.—Irpex vellereus B. &. Br.

On the underside of decaying logs, in large sheets with a free dimidiate edge up to 5 cm. broad, spreading to, and surrounding, grasses and shrubs in the neighbourhood. The upper surface of the free edge is dirty white, with concentric brownish zones, and strongly radially strigose. The species is remarkable, when fresh, for the strong differentiation of its substance into two distinct layers. The thickness, excluding the teeth, is 2 to 3 mm. ; the upper two-thirds of this are white, soft, and spongy, composed of loosely interwoven hyphæ ; the lower third is also white, but forms a compact *brittle* layer. The hymenium is white, becoming purplish or brownish ; sterile margin broad ; extreme edge tomentose, white becoming pale purple. Aculei irregular, compressed, often

sublabyrinthiform, 2 mm. long. When dry, the hymenium is minutely tomentose, being covered everywhere with erect hairs, up to 50 μ long and 5 μ diameter, minutely verrucose.

On rotting logs in jungle, Hakgala.

114.—Irpex colliculosus B. & Br.

This species was described in Fungi of Ceylon, 555, as "Totus resupinatus orbicularis, demum confluens convexus gilvus, margine tenui subbyssoideo pallido aculeis compressis farinaceis. On dead wood. Forming little elevated patches, which at length become confluent; hymenium sometimes persistently poriform, at first black-purple when moist." From the co-type in Herb. Peradeniya it appears to be resupinate, immature *Trametes versatilis*.

115.—Hymenochæte floridea B. & Br.

Thwaites 366 was listed by Berkeley and Broome in Fungi of Ceylon as two species, viz., *Hymenochæte floridea* B. & Br. (619), and *Thelephora floridea* B. & Br. (579). The former was described as "Resupinata, immarginata, tenuissima, purpureo-rubiginosa"; and the latter as "Resupinata, tenuis, atropurpurea, subtiliter tomentosa, margine pallidiore vel obsoleto."

There is only one specimen of Thwaites 366 in Herb. Peradeniya, and that is marked "619 *H. floridea*"; it contains several pieces, which are all *Hymenochæte*. Massee, in Monograph of the Thelephoreæ, does not mention either species, but the type specimen of *T. floridea* is in Herb. Kew, and is marked *Hymenochæte* by him; the specimens are *Hymenochæte*. It would appear, therefore, that the attribution of Thwaites 366 to two species by Berkeley and Broome was a mistake.

This species is fairly common on dead sticks and tree trunks at Hakgala. It is totally resupinate, effused, indeterminate, extremely thin, forming purple-red, oval or irregular patches, up to 5 cm. long and 2 cm. broad. The setæ, which are scarcely evident with a hand lens, are conical, yellow-brown, 30–50 μ long and 7 μ diameter at the base, projecting 15–30 μ above the surface.

116.—Duportella velutina Pat.

Specimens issued in Baker, Fungi Malayana, 25, as *Duportella velutina* Pat., n. g. & n. sp., are identical with *Corticium tristiculum* B. & Br., Fungi of Ceylon, 636 = *Hymenochæte tristiuscula* (B. & Br.) Massee, Mon. Thelephoreæ, Pt. II., Jour. Linn. Soc., XXVII., pp. 99–205.

117.—Thelephora atropurpurascens B. & Br.

Berkeley and Broome described this species from Thwaites' 989, as " Effusa, hymenio granulato-rugoso atropurpureo, marginem versus album, breviter fimbriatum rubescente. Forming elongated patches about three-quarter inch wide, rough, with irregular raised nodules, in the centre vinous-brown, more red towards the white margin." Parts of the type specimen are in Herb. Kew and Herb. Peradeniya.

In Herb. Peradeniya another gathering of the same species is included on a sheet, which is inscribed " 738 and 739," *i.e.*, *Reticularia atrorufa* B. & C. and *Reticularia venulosa* B. & C. There are four pieces of bark, but they do not bear any mark which would enable the two species to be distinguished. Three of them bear *Thelephora atropurpurascens* in addition to a pulverulent " *Reticularia* " mass ; the fourth bears the former only. This gathering has been previously re-described in " The Mycetozoa of Ceylon," Ann. Perad., IV., pp. 309–371.

During the last few years *Thelephora atropurpurascens* has been gathered on several occasions, usually on dead branches of mango. It forms thin, effused, encrusting, more or less circular patches, up to 3 cm. or more in diameter and about 0·5 mm. thick. The patch often originates from a small hole, such as an insect boring, in the branch, and is then umbilicate in the centre, and radially grooved.

The centre is subgelatinous, the margin byssoid. The general colour is vinous, purplish in the centre, and reddish elsewhere. The margin is white. The central portion is covered with close-set pulvinate elevations, sometimes radially elongated. In section the lowest layer is red-brown and byssoid, the middle layers white, and the upper layer brown and subgelatinous. The fungus is horny when dry. It is evident that this is a *Punctularia*, and will stand as *Punctularia atropurpurascens* (B. & Br.).

In very wet weather this fungus assumes quite a different form. Instead of coalescing into a flat stroma, the hyphæ remain more or less free, and form loose, pulvinate, floccose tufts up to 6 mm. thick, 2 to 3 cm. long, and 1 to 2 cm. broad. These are at first lavender with a white margin, then lavender to grayish-blue in the centre, and reddish-purple outwards: they finally collapse into a purple-brown mass of matted hyphæ and spores. The hyphæ are lax, about 3 μ diameter, often agglutinated into strands, purple-brown when old. The ultimate sporiferous branches are simple and 1·5–2 μ diameter. The conidia are purple-brown, spherical, 4 μ diameter, or oval, 5–6 × 3–4 μ, minutely verrucose; they are at first terminal, becoming lateral through the further growth of the hyphæ.

This second form may be found on the same branches as the *Punctularia*, and in some cases a *Punctularia* stroma may give rise to this growth, either on one side, or all round the margin. The inclusion of *Punctularia atropurpurascens* with "*Reticularia atrorufa*" and "*Reticularia venulosa*" on the herbarium sheet is thus explained. I may add that the fungus grows in my garden at Peradeniya and I have had numerous opportunities of observing it.

Reticularia atrorufa B. & C. and *R. venulosa* B. & C. were originally described by Berkeley from Cuba. Massee (Jour. Myc., 1889, p. 185) referred both to *Trichosporium Curtisii*. Torrend has found (Bull. Soc. Portugaise des Sciences Nat., IV., fasc. 1, p. 9) that *Reticularia venulosa* B. & C. is a *Ceriomyces* form of *Punctularia tuberculosa* Pat.

The Ceylon *Punctularia atropurpurascens* (B. & Br.) would appear to be different from *Punctularia tuberculosa* Pat. It agrees with the latter in having a *Ceriomyces* form, which has been attributed to the Cuban species *Reticularia atrorufa* and *R. venulosa*.

118.—Cyphella epileucina Sacc.

This species was described by Berkeley and Broome as "*Cyphella epileuca* B. & Br. Alutacea, pruinosa, pileo galeato e mycelio tenui albo oriundo; hymenio lævi, sporis binucleatis." The name was changed by Saccardo, because of the existence of a previous *Cyphella epileuca* B. & C. It

occurs in some abundance on dead leaves of *Amomum* at Hakgala. It is lemon-yellow, cylindrico-campanulate, pendent, up to 4 mm. long and 2 mm. diameter, affixed by a short curved stalk, or almost sessile, membranous, pale within, minutely tomentose ; the mouth is fimbriate and straight ; the stalk is up to 0·3 mm. long and 0·15 mm. diameter.

Berkeley and Broome cite Thwaites 98 as the type, and state that Thwaites 99 is a little darker. Both specimens are in Herb. Peradeniya. Thwaites 98 contains specimens on bark and also on a leaf, perhaps two different species. Thwaites 99 contains another species with an evident basal mycelium, which is absent in the case of the species on the leaf for which the name has here been adopted.

119.—Triphragmium clavellosum Berk.

Triphragmium Thwaitesii B. & Br.

In an article on Vegetable Pathology, No. CXLVIII., in the Gardeners' Chronicle, 1857, p. 21, Berkeley included a paragraph on *Triphragmium*, in which he wrote : " I now figure two additional species, *T. deglubens* and *T. clavellosum*, the latter of which grows apparently on some cherry, and is remarkable for the forked processes with which it is sparingly clothed, and the rather long hyaline stem. Léveillé's species on *Meum*, like this, has spinulose processes, and like the former of them parallel dissepiments." The rough figure is labelled " *Triphragmium clavellosum* Berk. from Montreal."

In the same journal, 1865, p. 196, Berkeley returned to the subject of the genus *Triphragmium*, and after describing *T. echinatum* Lév., wrote : " At a later period Mr. Thwaites forwarded to us from Ceylon a parasite on a species of Hedera (*H. Vahlii*), agreeing with the parasite on *Meum* in every particular, as Mr. Broome has observed, except that every process is either bifid or trifid, the short divisions being strongly recurved, whereas in M. Léveillé's plant, the spines, if forked, have the divisions much shorter and not in the least reflexed. ..... our plant may be regarded, then, as a marked variety of *Triphragmium echinatum*, characterized by the re-curved divisions of the spines, and may bear the name of *T. echinatum var. Thwaitesii*. The diameter of the spores.

exclusive of the spines, varies from 1/500 to 1/550 of an inch. Our figure represents two of the spores of the Ceylon plant and a spine magnified," &c.

In 1873 Berkeley and Broome published the second part of their Fungi of Ceylon, and included descriptions of two species of *Triphragmium*, viz., *T. Thwaitesii* and *T. clavellosum*, as follows :—

" 822. *Triphragmium Thwaitesii* B. & Br. Sporis globosis, processibus bifurcatis ornatis. On leaves of *Hedera Vahlii*, Peradeniya, April, 1861.

" 823. *Triphragmium clavellosum* B. in Gard. Chron., 1857. Sporis obovatis, processibus apice emarginatis ornatis. On *Paratrope terebinthacea*. At first obovate, simple, then divided by a horizontal septum ; the upper articulation divided into two vertically. Spots on *Hedera* and *Paratrope*, broad and diffuse ; in the Canadian specimens much narrower."

Here the confusion begins. *Triphragmium Thwaitesii* B. & Br. is the species which Berkeley regarded in 1865 as a variety of *T. echinatum ;* it is described here for the first time. The name *Triphragmium clavellosum* had been published previously, but with scarcely anything that could be called a description, and it might be claimed that this is the first publication of that species also. In any case this description is based on Ceylon material (on *Paratrope*), and it is the first occasion on which the name of a host-plant is given with certainty. Berkeley further confuses matters by referring to both *Hedera* and *Paratrope* under *T. clavellosum*, though he had named the species on *Hedera T. Thwaitesii*. However, this last point is immaterial, so far as Ceylon is concerned, since *Hedera Vahlii* and *Paratrope terebinthacea* are synonyms. There can be no doubt whatever that the records of these two species of *Triphragmium* in the Fungi of Ceylon refer to the same fungus on the same host-plant. The questions to be decided are, Is the Ceylon species identical with the Canadian species named in 1857, and, if so, is it to be called *T. clavellosum?*

In Grevillea, III., p. 55 (September, 1874), Berkeley again described *Triphragmium clavellosum* :—" Soris in maculas orbiculares congestis epidermide cinctis nigris ; sporis truncato-obovatis biseptatis ; septo superiore verticali, processibus

apice incrassatis emarginatis asperis.—Gard. Chron., 1857. On leaves apparently of *Amygdaleæ*. St. Lawrence. No. 5467, Montreal. Dr. Maclagan. Forming orbicular black patches ; sori surrounded by the cuticle. Spores at first oblongo-ovate, even, then truncato-ovate, with one horizontal and one vertical division, rough with clavate processes emarginate at the tips." This is the description cited in Saccardo, VII., p. 770, with the addition, " in foliis *Araliæ nudicaulis*, *Paratropæ terebinthaceæ*, *Hederæ*, et *Amygdaleaceæ* cujusdam in America boreali et in insula Ceylon." It would appear that this description of Berkeley's is merely a repetition of the original American record, with details added from the Ceylon specimens.

In the Journal of Mycology, VI., pp. 123, 124, F. W. Anderson re-describes these two species. He states : " In Saccardo's Sylloge, VII., p. 770, are given brief descriptions of *Triphragmium clavellosum* Berk. and *Triphragmium Thwaitesii* B. & Br. The former occurs in America on *Aralia nudicaulis*, and is said (*l. c.*) to occur also in Ceylon on *Paratrope terebinthacea*, *Hedera*, and *Amygdaleæ* species. The latter is given for Ceylon as occurring on *Hedera Vahlii*, and the question is asked whether it is not the same as *T. clavellosum*. I have not been able to secure Ceylon specimens referred to *T. clavellosum*, but it is quite likely that all such are referable to *T. Thwaitesii*. Of this latter, I have secured an authentic specimen from Mr. J. B. Ellis, to whom it was sent by Dr. M. C. Cooke, of London, England. As *T. clavellosum* and *T. Thwaitesii* are related species, it is easy to understand why confusion should arise concerning them, especially when we consider the meagre published descriptions in which spore measurements are entirely omitted. *T. Thwaitesii* is a quite distinct species from North American forms of *T. clavellosum*, and it is pretty safe to say that *T. clavellosum* is American, and that *T. Thwaitesii* is Asiatic."

The above communication seemed to have decided at least one of the points at issue, viz., the question of the identity of the two species, though Anderson is in error in referring the record on *Amygdaleæ* to Ceylon. The Ceylon fungus grows on *Heptapleuron stellatum* (= *Hedera Vahlii* = *Paratrope terebinthacea*) ; the cherry record is American. A few years later

the subject was reopened by Massee in Grevillea, XXI., p. 118 (June, 1893). Massee describes *Triphragmium clavellosum* B., quoting Gard. Chron., 1857, as the original record, and citing all the references given above, except that of Anderson. He does not refer to the type specimen, but cites "Rab.-Wint. Fungi Eur., No. 2918," a specimen on *Aralia nudicaulis*, collected in New Hampshire, United States. Massee states that *Triphragmium Thwaitesii* is identical with *T. clavellosum*, and expresses doubt whether both are not the same as *T. echinatum* Lév.; he does not state which specimens of *T. Thwaitesii* and *T. clavellosum* were compared, and hence there is an element of doubt in this determination, since the fact that Ceylon specimens of these two are identical does not assist in any way. Nor does he say anything about the host-plant of the type specimen of *T. clavellosum*, which was supposed to be some cherry.

In 1904 Milesi and Traverso published "Saggio di una monografia del genere Triphragmium," Annales Mycologici, II., pp. 143–156. They keep *Triphragmium clavellosum* and *T. Thwaitesii* distinct, but record both for Ceylon. The former is said to grow on *Aralia nudicaulis*, *A. hispida*, *Paratrope terebinthacea*, *Hedera* sp., and *Amygdalaceæ* in North America and Ceylon; and the latter on *Hedera Vahlii*, *H. stellata*, and *Heptapleurum* sp. in Ceylon and Java.

More recently Keissler has recorded "*Triphragmium clavellosum* syn. *T. Thwaitesii*" on leaves of *Akebia* sp., Kandy, Ceylon. This is certainly a misdetermination of the host-plant, *Akebia* not being known in Ceylon.

No one has attacked the problem of the identity of the host-plant in the type specimen of *T. clavellosum*. It seems to have been presumed that Berkeley's reference to a species of cherry was an error; if it was not, there is the alternative that the *T. clavellosum* of 1857 was another species altogether different from that on *Aralia*.

H. and P. Sydow (Monographia Uredinearum, III., p. 179) settle the difficulty by retaining *T. clavellosum* Berk. for the American species, and *T. Thwaitesii* B. & Br. for the Ceylon species. They state that the two species are very close to one another, but *T. Thwaitesii*, as a rule, has less numerous but

longer appendages, and a shorter stalk. They omit all reference to the cherry as a host-plant, but include the erroneous reference to *Akebia*.

In the " Uredineæ and Ustilagineæ of Ceylon " the identity of the two species was accepted, and the fungus recorded as *T. clavellosum*. The adoption of the latter name was an error, as *T. clavellosum* of 1857 is *nomen nudum*, and it is necessary to fall back on the description of 1873. According to the latter, *T. Thwaitesii* must be adopted for the Ceylon fungus, whether it is the same as the American species or not. We thus reach the same conclusion as Sydow, but by a different route.

It would be interesting to ascertain the date of the first description, based on American material, of *T. clavellosum*. Apparently it is that by Anderson, in Journal of Mycology, VI., p. 124 (1890). Previous descriptions refer to Ceylon material, with an American locality attached.

120.—Æcidium Pavettæ Berk.

In the Fungi of Ceylon (Jour. Linn. Soc., XIV., p. 95) Berkeley and Broome included, under 854, " *Æcidium Pavettæ* B., Hook. Jour. (1853), p. 231. Maculis orbicularibus hypophyllis nigris tenuibus, pseudoperidiis sparsis, margine angusto. On *Pavetta indica*." There is no type specimen of this species at Kew or Peradeniya, and, as stated in the Uredineæ and Ustilagineæ of Ceylon (Ann. Perad., V., p. 243), it is by no means clear from this description that it was an *Æcidium*, more especially in view of the fact that " pseudoperidiis sparsis, margine angusto " might be taken to fit the now well-known bacterial domatia which occur on *Pavetta* leaves.

The description quoted above is the one given in "Saccardo," but on referring to Hooker's London Journal of Botany the original is found to be somewhat more definite. It is to be found in Vol. VI., n. s. (1854), p. 231, not in Vol. V. (1853), and runs as follows :—"*Æcidium Pavettæ* n. s. ; maculis orbicularibus fuligineis ; peridii margine reflexo lobato ; sporis subangulatis. Hab. On the undersides of leaves of *Pavetta*. Ceylon (G. H. K. Thwaites, Esq.). Spots half an inch or more broad, dingy ; peridia scattered, more numerous towards

the centre ; border reflexed, lobed. Cells not crenate at the edge, as in the last (*i.e.*, *Æcidium rhytismoideum*). Spores somewhat angular. A far more minute species than the last. The spot is merely discoloured and not incrassated as in that species." It is to be noted that Berkeley did not state that it was on *Pavetta indica*.

Two species of Æcidium, *Æcidium flavidum* B. & Br. and *Æcidium Pavettæ* Berk., were listed in the Fungi of Ceylon. *Æcidium flavidum* was described as " Maculis effusis flavidis hypophyllis ; soris sparsis ; pseudoperidiis margine crenatis laceris. On leaves of *Pavetta indica*. Peradeniya. February, 1868."

It will be seen that there is very little difference between the two descriptions. *Æcidium Pavettæ* is said to produce a black spot, but not a thickened black spot as in *Æcidium rhytismoideum*, while *Æcidium flavidum* produces a yellow spot. This difference may be merely a matter of age ; *Æcidium argyreiæ* produces a yellow spot which becomes thin and black later. In the absence of type specimens there is nothing to contradict the supposition that *Æcidium flavidum* is identical with *Æcidium Pavettæ*, as indicated by Sydow and Butler (Fungi Indiæ Orientalis, IV.).

In the Uredineæ and Ustilagineæ of Ceylon an Æcidium on *Pavetta hispidula* W. & A. was listed under the name of *Æcidium flavidum* ; it occurred on the leaves, on pale yellow-green spots, which were slightly bullate. Since that publication an Æcidium identical in microscopic character has been found on several occasions on *Pavetta indica* L. at Hakgala. It occurs on the young stems and petioles, which are in consequence distorted and thickened ; the stems are greatly swollen, and the leaves are reduced in area. The affected shoots form Witches' brooms.

The species which causes these distortions on *Pavetta indica* does not appear to differ from that which occurred on undistorted leaves of *Pavetta hispidula*. The case may be parallel to that of *Tabernæmontana dichotoma* attacked by *Æcidium ceraceum*, which causes swellings and distortions on the stems, but may not produce any such effect when on the leaves.

121.—Peziza oncospermatis B. & Br.

This species was described by Berkeley and Broome in Fungi of Ceylon, 942 :—" *Peziza* (*Dasyscypha*) *oncospermatis* B. & Br., Cupulis breviter stipatis cyathiformibus tomentosis luteis : sporidiis fusiformibus angustis (435). On *Oncosperma fasciculatum* Thw., Habgalla, December, 1867. Minute, scattered, pale yellow ; sporidia fusiform, sharply pointed, thicker at one end, ·0008–·001 long ; cups ·012 high."

This well-marked species is common at Hakgala. It does not, however, grow on *Oncosperma* (which is unknown at Hakgala), but on the dead frond bases which sheath the stems of the tree fern, *Hemitelia Walkeræ*.

The total height of the fungus is about 0·6 mm. Its stalk is about 0·1 mm. diameter and 0·1–0·2 mm. high, either simple, or dividing above into two to four branches, each of which bears a cup. The margins of the individual cups are strongly plicate, so that the whole fungus has the appearance of a rosette, up to 1 mm. diameter. It is sulphur yellow, the outer surface tomentose or hairy, with long, adpressed, upwardly directed hairs ; the margin is strongly fimbriate with septate hairs, which are up to 80 μ long, and 3–4 μ diameter with a blunt apex, slightly warted, and bear coarse yellow granules. The asci are clavate, shortly pedicellate, with obliquely uniseriate spores, 75–90 × 9 μ ; paraphyses simple, slender. The apex of the ascus is not coloured blue with iodine. The ascospores are slightly cymbiform, ends pointed, hyaline, continuous ; extruded spores measure 30–33 × 3–4 μ ; Berkeley and Broome's measurement is 20–25 μ.

It is clear that this species falls in the genus *Aranæa* Penz. & Sacc., and must accordingly be known as *Aranæa oncospermatis* (B. & Br.). It agrees exactly with the description of *Aranæa macrospora* Penz. & Sacc., but differs in colour from the figure of the latter.

122.—Peziza verruculosa B. & Br.

In Fungi of Ceylon, 938, Berkeley and Broome recorded *Peziza hirta* (Thwaites 2 and 273). In Herb. Kew, in the cover of *P. hirta*, there are drawings of spores, marked Ceylon 109, and Ceylon 2 and 273 ; specimens, *Peziza hirta*, Ceylon,

1854, G. H. K. T.; and two sheets, *ex* Herb. Currey, *Peziza hirta*, Ceylon 2, and *P. hirta*, Ceylon, 273. This species is very common on rotten wood, especially in up-country districts; from the length of its hairs it should probably be referred to *P. badioberbis*.

Immediately succeeding *P. hirta*, Berkeley and Broome described *P. verruculosa* B. & Br. It was "Ascis linearibus; sporidiis uniseriatis globosis fortiter verruculosis, paraphysibus linearibus intus globulis repletis; cætera *P. hirtæ*." They gave a figure of the ascus and spores.

There is no specimen of *P. verruculosa* in Herb. Kew, and hence the species is not mentioned in Massee's Revision of Berkeley's types. During the last ten years numerous Ceylon gatherings of *P. hirta* have been examined in the hope of discovering *P. verruculosa*, but without any success. Odd spherical spores occur in the asci of *P. hirta*, and it was thought possible that Berkeley and Broome might have met with a specimen in which spherical spores predominated, though we did not find any such. On a recent visit to England, however, it was found that the type of *P. verruculosa* is in Herb. British Museum, *ex* Herb. Broome. It consists of part of one specimen. But it does not in the least resemble *P. hirta*. It is a much larger species, and has no marginal hairs whatsoever. It proves to be *Barlœina albocærulea* Penz. & Sacc., which often occurs in quantity at Peradeniya.

This same species apparently provided the *Peziza sarmentorum var. geophila* of Berkeley and Broome's list. Massee referred these latter specimens to *Barlæa lobata*, in the cover of which they will be found at Kew. If the colour given for *B. lobata* in the published descriptions is correct, the Ceylon species is immediately distinguishable. The spores of *P. sarmentorum var. geophila* are slightly larger than those of the type of *P. verruculosa*, but otherwise the two do not appear to differ. This species will now stand as *Barlœina verruculosa* (B. & Br.) = *B. albocærulea* Penz. & Sacc.

123.—Cudoniella javanica P. Henn.

This species is not uncommon at Hakgala. In Hennings' description the stalk is said to be 3–5 cm. long. From

his figure it is evident that this should be millimetres, not centimetres.

124.—**Hypocrea Bambusæ** B. & Br.

This species was described by Berkeley and Broome in the Fungi of Ceylon, 999, as " Placentiformis, fusca, granulata, ascis linearibus : sporiidiis filiformibus. On inflorescence of Bambusa." In Michelia, I., p. 323, it was transferred to *Hypocrella* by Saccardo. The fungus has not been found recently in Ceylon, and the following description has been drawn up from the co-type in Herb. Peradeniya.

The fungus is parasitic on some species of bamboo. Its stromata are situated at the apex of short lateral branches, and it appears probable that these owe their suppressed condition to the action of the fungus. Part of the fungus consists of a mass of hyphæ, which encloses the inner leaves of the terminal bud and forms a pseudostroma, hidden by the outer leaves. At the apex of this the external stroma is produced.

The external stroma is black, hemispherical, plane beneath and somewhat flattened above, about 1·5 mm. diameter, rough with close-set conical ostiola, which project up to 0·1 mm. The perithecia are flask-shaped, usually close-set and sometimes wedge-shaped owing to the lateral compression, regularly arranged round the periphery of the upper surface ; they are up to 0·6 mm. deep (including the neck) and 0·2 mm. diameter. The asci are about 400 μ long and 4–6 μ diameter ; the spores are about as long as the ascus, and 1–1·5 μ diameter, apparently continuous.

This species must now be placed in *Balansia*, though it is difficult to understand where recent revisions of the *Balansia* group have left the various genera, and what differences are relied upon to separate them. It will therefore stand, at least temporarily, as *Balansia Bambusæ* (B. & Br.) Petch.

In Journal of Botany (1896), p. 152, Massee stated that *Hypocrella axillaris* Cooke, on *Eragrostis*, Queensland, is identical with *Hypocrea Bambusæ* B. & Br. Cooke's description in Grevillea, XX., p. 4, is " Stroma obturbinate, or obclavate, seated in the upper axils (5 mm. long, 2–3 mm. broad), black, opaque, minutely granular with the ostiola ;

substance white. Perithecia very minute, immersed in the periphery. Asci cylindrical, 120 μ long. Sporidia filiform, at length multiseptate (about 100 μ long), hyaline. On grasses, Brisbane. Somewhat resembling *H. Bambusæ*, but larger and less globose. Size and form not unlike *H. strangulans* Mont."

It is difficult to see any resemblance between the two species, except that both are black. *Hypocrea Bambusæ*, as a rule, has a definite hemispherical stroma seated on the apex of the shoot. *Hypocrella axillaris* also grows on and involves a lateral shoot, but, just as in *Balansia brevis*, the stroma is adnate to the lowest leaf of the shoot over its whole length. It is not obturbinate or obclavate, unless one looks at it from the natural erect position of the grass. Viewed with the leaf to which it is adnate horizontal, it is pulvinate, tapering to one end.

The stromata are pulvinate, tapering to one end, wrinkled, almost smooth, black, adnate to the leaf, up to 5 mm. long, 3 mm. broad, and 2 mm. high. The internal tissue is white, and composed of hyphæ and the tissues of the bud ; the black outer layer is up to 0·1 mm. deep. The perithecia are flask-shaped, close-set, about 0·3 mm. deep (including the neck), and 0·15 mm. diameter ; the ostiola do not, or scarcely, project. The asci are about 180 × 5 μ, and the spores filiform, as long as the ascus, 1–1·5 μ diameter, septate. The Queensland species differs from *Balansia Bambusæ* in the smaller perithecia, and the smooth larger stromata of different shape and habit. It will stand as *Balansia axillaris* (Cooke) Petch.

125.—**Nectria dorcas** (B. & Br.) Cooke.

Berkeley and Broome described this species as *Peziza dorcas*, Fungi of Ceylon, 944. It was transferred to *Nectria* by Cooke, Grevillea, XII., pp. 77–83, but placed in *Dialonectria*. An examination of the type specimens confirms Cooke's diagnosis so far as *Nectria* is concerned, the ostiolum being clearly evident in mounted examples.

The perithecia are yellowish-brown to fawn-coloured, globose, 0·3 mm. diameter, scattered or clustered. When dry the centre collapses. They are densely clothed with interwoven hyphæ, hyaline or brownish in colour, with free spreading ends, nodular above, up to 30 × 4 μ. The asci are

clavate, 8-spored, spores biseriate, 80 × 12 μ. The ascospores are oblong-oval, ends rounded, 1-septate, not constricted at the septa, 12–16 × 5 μ, wall faintly striate.

As would be judged from Berkeley and Broome's reference to *Dasyscypha*, the fungus is *Lasionectria*, not *Dialonectria*.

126.—Nectria rigidiuscula B. & Br.

This species was described by Berkeley and Broome, Fungi of Ceylon, 1024, as "Cæspitosa ; peritheciis ovatis pallide coccineis, vix collabentibus : sporidiis submetulæformibus quadrinucleatis, demum 3-septatis (173C)." It was listed by Saccardo as *Calonectria rigidiuscula* (Syll. Fung., II., p. 543). Broome's drawing and the type specimen are in Herb. British Museum. It is the same as *Calonectria sulcata* Starb., and provides an earlier name for this widely-distributed and equally widely-named tropical species. Berkeley and Broome's description is incorrect as to colour, and incomplete.

127.—Nectria fenestrata Cooke.

Nectria fenestrata was described by Cooke in Grevillea, XII., p. 81, from specimens in Berkeley's herbarium. In the cover of this species in Herb. Kew is a drawing, marked Ceylon 28, which bears a note in Berkeley's handwriting : "A *Nectria* mixed with *Sphærostilbe*." There is an abundance of specimens, Thwaites 48. On the same sheet is a specimen from Canada labelled "*Sphærostilbe pseudotrichia*. *Nectria fenestrata*." The specimens are *Megalonectria pseudotrichia* Schw. ; 28 and 48 are the Thwaites' numbers recorded by Berkeley and Broome for *Megalonectria pseudotrichia*. Apparently Berkeley discovered that his *Nectria fenestrata* was *Megalonectria pseudotrichia*, and did not publish the former name, but his original mistake was resurrected by Cooke.

128.—Epichloë pulvinulus B. & Br.

This species was described by Berkeley and Broome in Fungi of Ceylon, 981. It grew on a species of Panicum. In Saccardo, Syll. Fungorum, II., p. 581, it is listed as *Hypocrella pulvinulus*.

The fungus develops on a lateral shoot of the grass, arresting its development while still enclosed in the leaf sheath. Within

the sheath it forms a white sterile stroma, which encloses the tissues of the shoot, and at the mouth of the sheath this gives rise to an external fertile stroma. The fertile stroma is honey-coloured, dotted with brown, translucent ostiola ; it is flattened pulvinate (flattened in a plane parallel to the stem of the host), and measures up to 3 mm. in length, 2 mm. in breadth, and 1 mm. in thickness ; internally it is pale brown. The perithecia are flask-shaped, totally immersed, and crowded in a distinct peripheral zone ; they have rather thick walls, and are up to 0·5 mm. deep and 0·15 mm. in diameter. The asci are cylindric, 250–300 × 5–6 μ, capped, the cap being furnished with a central pore. The spores are filiform, as long as the ascus, and septate.

This species has the same structure as *Balansia*, but its stroma is light-coloured ; it must therefore be included in *Balansiella* P. Henn., as *Balansiella pulvinula* (B. & Br.).

129.—Epichloë cinerea B. & Br.

This was described by Berkeley and Broome as " Cylindrica, cinerea : sporis longis filiformibus. On *Eragrostis nutans*."

The co-type in Herb. Peradeniya contains five inflorescences of the grass. In each of these the branches and spikelets are bound into a cylindrical mass by mycelium, which does not, however, spread over the exterior. There are indications which appear to show that there may have been a continuous thin white covering originally, but if so, it has disappeared. At various points this pseudostroma has produced perithecii-gerous areas. These fertile parts are about 0·3 mm. thick ; they may be elongated-oval, several on one inflorescence, or they may run nearly the whole length of the inflorescence. In one case an inflorescence bears a fertile stroma 6 cm. long and 1·5 mm. broad on one side, and two others each about 1 cm. long and 1 mm. broad, in the same straight line, on the other side.

The stromata are now blackish-brown, dotted with black ostiola, and about 0·3 mm. thick ; the margin is somewhat abrupt. The stroma consists of very little more than a layer of perithecia crowded together ; the perithecia are roughly oblong or cuboid in section, and measure about

0·2 mm. in depth and 0·1–0·2 mm. in breadth ; the asci are cylindric, up to 150 × 4 μ, and contain filiform ascospores, 1 μ diameter, as long as the ascus. The specimens appear to be not quite mature.

Sydow and Butler, in Fungi Indiæ Orientalis, III. (Ann. Myc., IX., p. 394), have re-described *Epichloë cinerea* from specimens collected in India. In their specimens the stroma occupies the whole inflorescence, and is 1·5–4 cm. long and 1–2 mm. thick ; probably the latter measurement includes the whole inflorescence. The stromata are said to be at first cinereous, owing to the production of conidia, then purplish-black. The perithecia are 150–200 × 60–90 μ, with black ostiola ; the asci 125–165 × 5–6·5 μ ; and the spores 1·5–2 μ in diameter, multiguttulate or obsoletely septate, " intra ascos haud in articulos dilabentibus."

Sydow and Butler's specimens apparently entirely enclose the inflorescence. The Ceylon specimens, on the other hand, have discontinuous stromata on the pseudosclerotium formed by the mycelium and the branches of the panicle. On the available specimens the Ceylon species would be referable to *Dothichloë*, though it is possible that in some cases the scattered stroma may coalesce and form a continuous covering. Again, the colour of the herbarium specimens suggests that *Epichloë cinerea* is never purple-black, as described by Sydow and Butler ; the surface of the stroma is now blackish-brown, and contrasts strongly with the black ostiola. It appears to have been pale coloured when fresh.

It would seem probable that the species described by Sydow and Butler is not identical with *Epichloë cinerea* B. & Br., but it may be preferable to obtain a further series of specimens of the latter before arriving at a definite decision.

130.—Rosellinia bothrina B. & Br.

Examination of the Kew specimens of *Rosellinia bothrina* B. & Br. has shown that the species which causes root disease of tea, &c., hitherto referred to *Rosellinia bothrina*, is quite distinct from the latter. The type of *Rosellinia bothrina* (Thwaites 299) probably contains two species, one of them immature. The mature form has perithecia 1·5–2 mm. in

diameter, depressed globose, minutely adpressed hairy, black-brown, embedded in a dense weft of purple-brown mycelium ; the ostiolum is small, conical, black, and glabrous. The spores are narrow-oval, ends rounded, subcymbiform in one aspect, with a thin hyaline coat, 28–38 × 8–11 μ. They do not at all agree with Berkeley and Broome's description " sporidiis fusiformibus acutissimis," which fits the parasitic species far better.

I have what I take to be the same species from Hakgala, but in that gathering the perithecia are not depressed. The adpressed hairy covering, derived no doubt from the surrounding mycelium, weathers off, and the perithecia become black. The spores of this collection are 24–32 × 9-13 μ : they are the same shape as in the type, and, like those of the latter, are uniseriate in the ascus.

The species which we have hitherto referred to *R. bothrina* was collected by Thwaites (219), but was assigned by Berkeley and Broome to *Rosellinia aquila* Fr., from which it differs completely. Indeed, it differs so much that one is inclined to suggest that Berkeley and Broome confused their numbers, and that Thwaites 299 should have been *Rosellinia aquila* (which it resembles), and Thwaites 219, which the brief description fits, *Rosellinia bothrina*. As this species (Thwaites 219) does not appear to have been named, it may be known as *Rosellinia arcuata* n. sp. A full description was given in Ann. Perad., IV., pp. 433, 434, under *Rosellinia bothrina*.

Rosellinia arcuata.—Peritheciis gregariis, primo in mycelio purpureobrunneo immersis, fuscobrunneis, deinde nigris, liberis, carbonaceis, globosis, leniter depressis, 1·5–2·4 mm. diam., levibus, ostiolo conico, 0·1 mm. alt., basi 0·4 mm. diam. oriundo. Ascis cylindraceis, 300 μ long., 8 μ diam., sporis oblique uniseriatis ; paraphysibus circa 2 μ diam., ascos æquantibus. Sporis nigris, cymbiformibus, apicibus acutis et sæpe subito contractis, 30–47 × 5–7 μ.

131.—Rosellinia catervaria (B. & Br.) Sacc.

This species was sent by Thwaites, mixed with *Bombardia Janus*, and was described by Berkeley and Broome under the name of *Sphæria* (*denudatæ*) *catervaria* B. & Br., Fungi of Ceylon, 1104.

The perithecia are superficial, scattered or clustered, up to 0·4 mm. diameter, black, minutely rugose, with a small conical ostiolum. The asci measure 70–80 × 6–7 μ. The ascospores are elliptic, with rounded ends, 1-guttulate, pale blackish-brown, 8–11 × 3·5–4 μ.

132.—Sphæria Janus B. & Br.

This species was described by Berkeley and Broome in Fungi of Ceylon, 1105. The ascospores were said to be like those of *Sphæria Bombarda*. It was listed in Saccardo as *Lasiosphæria*.

From the type specimen and recently collected examples it is found that the perithecia grow on dead wood, and are either scattered or clustered, black, leathery, superficial, with a slight basal weft of hyphæ, globose below, conical above, up to 0·6 mm. diameter, minutely rugose, longitudinally sulcate at the apex. When mounted the perithecial wall is areolated with thinner pale brown lines, and the outer layer appears as a series of black polygonal areas united by hyphæ. The asci are cylindrico-clavate, with a long tapering pedicel, and 8-spored; they measure 250–350 × 12 μ. The spores are at first hyaline, elliptic, about 20 × 12 μ, with an apical appendage, up to 30 μ long and 2 μ diameter, and a basal appendage which consists of a thick part, 30–40 × 4 μ, followed by a thinner part, up to 36 × 2 μ. When mature the ascospores lose their appendages, and are black-brown, broadly oval, slightly attenuated at one end and truncate at the other, 17–22 × 10–12 μ. The fungus is a *Bombardia*, and will stand as *Bombardia Janus* (B. & Br.).

133.—Rosellinia Tetradeniæ (B. & Br.) Sacc.

Sphæria (*byssisedæ*) *Tetradeniæ* was described by Berkeley and Broome in Fungi of Ceylon, 1094. No Thwaites number was quoted. It was included in Saccardo, Syll. Fungorum, I., p. 256, as *Rosellinia*, with the additional information, not in the original description, that it grew on branches.

There is apparently no specimen of *Rosellinia Tetradeniæ* in Herb. Kew or Herb. British Museum. The description is "Mycelio repente e fibris tenellis septatis; perithecis globosis subliberis; ascis ovatis, brevibus; sporidiis oblongo-ellipticis. On Tetradenia. Sporidia ·0016 long."

In Fungi of Ceylon, 1173, Berkeley and Broome described *Dothidea Tetradeniæ*,—"Mycelio floccis reticulatis radiantibus; pseudoperitheciis hic illic sparsis: ascis ellipticis: sporidiis oblongis hyalinis. On the under side of leaves of *Tetradenia*. Forming little thin patches. Sporidia ·0015 long." This was listed in Saccardo as *Homostegia*. It has been re-described by Theissen and Sydow as *Meliola Tetradeniæ* (Ann. Myc., XII., p. 177).

It is evident that Berkeley and Broome's description of *Sphæria Tetradeniæ* would apply to a *Meliola* equally with their description of *Dothidea Tetradeniæ*, and in the absence of any type specimen of the former, it may be suggested that the same specimen has been described twice.

After *Dothidea Tetradeniæ*, Berkeley and Broome mentioned a variety *triseptata*, which is listed in Saccardo as *Meliola triseptata* (Syll., I., p. 762). Theissen and Sydow (*loc. cit.*) state that the variety is not to be found. It is represented in Herb. Peradeniya, and also in Herb. Kew, but in the latter it is named *Meliola amphitricha var. triseptata*, and is included in the cover of *Meliola amphitricha*. As this latter species is B. & Br. 1174, their note may have been accidentally transposed; presumably it should have followed 1174, not 1173 as printed.

134.—Pemphidium dilatatum B. & Br.

Thwaites' specimen 293 was described by Berkeley and Broome in Fungi of Ceylon, 1134, as *Pemphidium dilatatum*,—"Peritheciis depressis, basi dilatatis, opacis; ascis clavatis: sporidiis breviter subcymbiformibus. On the petioles apparently of some palm. Sporidia ·0008 long by ·0006 (inches)." In Saccardo, Syll., II., p. 659, it is transferred to *Myiocopron*.

The co-type in Herb. Peradeniya contains four pieces of the host-plant. Three of them bear a fungus which answers to Berkeley and Broome's brief description, but the fourth is a different species. In all cases, however, the fungus is subepidermal, not superficial, and cannot be included either in *Pemphidium* or *Myiocopron*. The spores are dark in both cases, and the fungi belong to *Anthostomella*. The following are the descriptions.

Anthostomella dilataia (B. & Br.) Petch. Perithecia scattered, subepidermal, lenticular, black, carbonaceous, about 0·35 mm. diameter, 0·1 mm. high, opening by a circular pore about 0·05 mm. diameter, ostiolum not projecting : asci not seen ; spores cymbiform, or broadly oval, ends rounded, brown, 16–19 × 8–13 μ. *Pemphidium dilatatum* B. & Br., in part. On petioles of some palm (?).

Anthostomella confluens Petch. Perithecia subepidermal, lenticular, black, carbonaceous, about 0·3 mm. diameter, opening by a circular pore, ostiolum not projecting ; scattered, surrounded by a pseudostroma formed from the blackened epidermis, which unites with adjacent pseudostromata to form a continuous black sheet. Asci not seen. Spores narrow-oval, ends rounded, fuliginous to black, 9–12 × 3–4 μ.

135.—Gymnosporium confusum B. & Br.

This forms 813 of the Fungi of Ceylon. The description is " Effusum nigrum ; sporis magnis subglobosis. With *Monatospora fusigera*. Spores ·0001–·0008 in diameter." It is listed in Saccardo as *Coniosporium confusum* (Syll., IV., p. 245). *Monatospora fusigera* B. & Br. is Fungi of Ceylon, 891, described as " Floccis hyalinis, apice attenuatis ; sporis fusiformibus fuscis, utrinque obtusiusculis (148). Apparently on the leaves of some palm. Spores ·001 long."

In Herb. Kew *sub G. confusum* are only the duplicates of Thwaites 148, marked *Monatospora fusigera* and *Gymnosporium confusum ;* under *Monatospora fusigera* is a sheet bearing three pieces, labelled *Monatospora fusigera*, two of which are chiefly *Gymnosporium*.

Coniosporium confusum has linear acervuli, up to 4 mm. long, bordered by the upturned epidermis of the host ; its conidia are rather pale yellowish-brown, spherical, 14–36 μ diameter, or oval, 16–30 × 10–20 μ.

Monatospora fusigera forms a thin black crust over the substratum, and overruns the acervuli of the *Coniosporium*. Its hyphæ are hyaline, loosely interwoven, about 2 μ diameter. The conidia are fuliginous to black, narrow-oval, ends blunt, sometimes acuminate, 14–19 × 7–9 μ.

136.—Stysanus monilifer (B. & Br.) Sacc.

This species was originally described by Berkeley and Broome, Fungi of Ceylon, 893, as *Periconia monilifera*. Their description is " Floccis erectis scabris : capitulo e floccis furcatis compacto : sporis concatenatis subglobosis (246). Spores ·00015–·00025 in diameter." In Saccardo, Syll. IV., p. 622, it is transferred to *Stysanus*. The reason for that change is not obvious. Berkeley and Broome's figure shows a simple stalk, and a head composed of radiating conidiophores. From the figure the fungus is evidently *Aspergillus* or *Sterigmatocystis*, and the phrase " floccis furcatis " points to the latter. The type is now in Herb. British Museum, with the original figure, and an examination shows that it is a *Sterigmatocystis*. The name will, therefore, stand as *Sterigmatocystis monilifera* (B. & Br.).

The conidiophores are pale yellow, clustered, up to 3 mm. high, and the total diameter of the head (in herbarium specimens) is 0·25 mm. The stalk is up to 20 μ diameter, not septate, closely and strongly verrucose ; its apex is globose, up to 100 μ diameter ; the primary ramuli are up to 60 μ long, and bear at their apices numerous secondary ramuli, up to 16 μ long. The conidia are pale yellow, almost hyaline, minutely warted, 3–4 μ diameter (from herbarium specimens).

Another species collected by Thwaites, *Aspergillus flavidus* B. & Br., bears a striking resemblance to *Sterigmatocystis monilifera*, and on naked-eye characters would be thought to be the same species. It was described as " Flavidus : floccis granulatis inarticulatis : sporis late ellipticis (244)." To this is added the explanatory note : " The flocci have little straight ramuli at the top ; these, however, all rub off when the covering glass is moved. Spores ·00025." The types of this species are in Herb. Kew and Herb. Peradeniya. Examination shows that this is another *Sterigmatocystis*, but apparently a different species from *monilifera*. The conidiophores are pale yellow, clustered, up to 2 mm. high. The stalk is up to 50 μ diameter, smooth, not septate ; the apex is globose, up to 150 μ diameter. The primary ramuli are cylindric, 16–32 μ long, and the secondary flask-shaped, 12 μ long. The spores

are pale yellow, minutely warted (almost smooth), spherical, 3–4 μ diameter (from herbarium specimens). It differs from *Sterigmatocystis monilifera* in the stouter stalk and head, and the shorter ramuli. Berkeley and Broome state that the stalk is granulated, but those of the specimens examined were perfectly smooth. Their reference to the conidia as elliptical is probably based on those of a parasitic mould which overruns the specimens. There may be some doubt whether the differences are constant, but for the present this species may be known as *Sterigmatocystis flavida* (B. & Br.).

Penicillium flavovirens Cooke & Mass. is a *Penicillium*.

137.—Bactridium clavatum B. & Br.

This was described in Fungi of Ceylon, 807, as " Melleum, pulvinulatum, sporis clavatis 4-septatis, articulo medio majore (240). On dead wood, Nuwara Eliya. Spores when mature ·008 (inch.) long." From the herbarium specimens, and others recently collected at Hakgala, there seems to be no doubt that this is identical with *Arthrosporium chrysocephalum* Penz. & Sacc., Icones Fungorum Javanicorum, p. 109. Penzig and Saccardo describe their species as " Sparsum v. laxe gregarium, carnulosum, crassiusculum, 2 mm. alt.; stipite tereti-conico, erecto, candido, ex hyphis dense intricatis formato, extus (ob cellulas exertas) minute asperulo, basi 0·7 mm. cr.; capitulo sphærico, 1 mm. diam., aureo; conidiis maximis, clavatis, apice rotundatis, basi acutatis, 7–8-septatis, ad septa non constrictis, 250–275 × 40–44 μ, flavis, utrinque subhyalinis, ex apice hypharum in vertice stipitis constipatarum oriundis."

Penzig and Saccardo's description fits the Ceylon fungus exactly. In specimens recently collected the conidia were obclavate, 4–9-septate, 150–240 × 30–36 μ. The conidia form a globose head, in a continuous waxy mass, as in *Fusarium*, not pulverulent or with distinct radiating conidia as shown in Penzig and Saccardo's figure (which is named *Arthropodium*). As these authors state, it is a stalked *Bactridium*, not an *Arthrosporium*, and their suggested new generic name *Podobactridium* may well be adopted. The species will then stand as *Podobactridium clavatum* (B. & Br.).

NAME INDEX.

	Page
Æcidium flavidum B. & Br.	167
Æcidium Pavettæ B. & Br.	166
Anthostomella dilatata (B. & Br.) Petch ..	178
Anthostomella confluens Petch ..	178
Anthracophyllum Beccarianum Ces. ..	153
Anthracophyllum nigrita (Lév.) Kalch. ..	153
Aranæa macrospora Penz. & Sacc. ..	168
Aranæa oncospermatis (B. & Br.) Petch ..	168
Arthrosporium chrysocephalum Penz. & Sacc. ..	180
Bactridium clavatum B. & Br. ..	180
Balansia axillaris (Cooke) Petch ..	171
Balansia Bambusæ (B. & Br.) Petch ..	170
Balansiella pulvinula (B. & Br.) Petch ..	173
Barlæa lobata (B. & C.) Sacc.	169
Barleina albocærulea Penz. & Sacc. ..	169
Barleina verruculosa (B. & Br.) Petch ..	169
Bombardia Janus (B. & Br.) Petch ..	176
Calonectria rigidiuscula (B. & Br.) Sacc. ..	172
Calonectria sulcata Starb.	172
Coniosporium confusum (B. & Br.) Sacc. ..	178
Corticium flavorubens B. & Br. ..	156
Corticium peroxydatum B. & Br. ..	157
Corticium sulphureum Fr.	157
Corticium tristiculum B. & Br. ..	160
Cudoniella javanica P. Henn.	169
Cyphella epileuca B. & Br.	161
Cyphella epileucina Sacc.	161
Dothidea Tetradeniæ B. & Br. ..	177
Duportella velutina Pat.	160
Epichloë cinerea B. & Br.	173
Epichloë pulvinulus B. & Br.	172
Gymnosporium confusum B. & Br. ..	178
Hydnum mucidum Pers.	155
Hydnum pseudomucidum Petch ..	156

	Page
Hymenochæte floridea B. & Br. ..	159
Hymenochæte tristiuscula (B. & Br.) Mass. ..	160
Hypocrea Bambusæ B. & Br.	170
Hypocrella axillaris Cooke	170
Hypocrella Bambusæ (B. & Br.) Sacc. ..	170
Hypocrella pulvinulus (B. & Br.) Sacc. ..	172
Irpex colliculosus B. & Br.	159
Irpex vellereus B. & Br.	158
Lasiosphæria Janus (B. & Br.) Sacc. ..	176
Marasmius actinophorus B. & Br. ..	156
Marasmius coronatus Petch	156
Megalonectria pseudotrichia Schw. ..	172
Meliola amphitricha var. triseptata B. & Br. ..	177
Meliola Tetradeniæ (B. & Br.) Theiss. & Syd. ..	177
Meliola triseptata Sacc.	177
Monatospora fusigera B. & Br. ..	178
Myiocopron dilatatum (B. & Br.) Sacc. ..	177
Nectria dorcas (B. & Br.) Cooke ..	171
Nectria fenestrata Cooke	172
Nectria rigidiuscula B. & Br.	172
Panus melanophyllus Fr.	153
Pemphidium dilatatum B. & Br. ..	177
Penicillium flavovirens Cooke & Mass. ..	180
Periconia monilifer B. & Br.	179
Peziza badioberbis Berk.	169
Peziza dorcas B. & Br.	171
Peziza hirta Schum.	168
Peziza oncospermatis B. & Br. ..	168
Peziza sarmentorum var. geophila B. & Br. ..	169
Peziza verruculosa B. & Br. ..	168
Podobactridium clavatum (B. & Br.) Petch ..	180
Punctularia atropurpurascens (B. & Br.) Petch..	160
Punctularia tuberculosa Pat.	161
Reticularia atrorufa B. & C.	160
Reticularia venulosa B. & C.	160
Rosellinia aquila Fr.	175
Rosellinia arcuata Petch	175
Rosellinia bothrina (B. & Br.) Sacc. ..	174

	Page
Rosellinia catervaria (B. & Br.) Sacc. ..	175
Rosellinia Tetradeniæ (B. & Br.) Sacc. ..	176
Sphæria Janus B. & Br.	176
Stereum acerinum Fr.	157
Stereum strumosum Fr.	157
Stereum sulphureum Fr.	157
Sterigmatocystis flavida (B. & Br.) Petch ..	180
Sterigmatocystis monilifera (B. & Br.) Petch ..	179
Stysanus monilifer (B. & Br.) Sacc. ..	179
Thelephora atropurpurascens B. & Br. ..	160
Thelephora floridea B. & Br.	159
Trichosporium Curtisii Mass.	161
Triphragmium clavellosum Berk. ..	162
Triphragmium Thwaitesii B. & Br. ..	162
Xerotus Berterii Mont.	153
Xerotus lateritius B. & C.	153
Xerotus nigrita Lév.	153

NOTES.

Water hyacinth.—In the Kadugannawa district the name "Diya-kehel" (water plantain) has been given to this recently introduced plant. "Diya-kehel" was included by Moon in his list of varieties of plantains, but, as far as ascertainable, this name is not in use at the present day.—T. Petch.

Stachys arvensis.—The occurrence of *Stachys arvensis* at Nuwara Eliya was referred to by Thwaites in a letter to W. Ferguson, December 7, 1859; and was recorded in the preface to the "Enumeratio Plantarum Zeylaniæ." It was not mentioned by Trimen in his "Handbook to the Flora of Ceylon." In April, 1915, it was found to be common at Nuwara Eliya on roadsides towards Pedro.—T. Petch.

Mimosa pudica L.—In "Notes on Animal and Plant Life in the Vedda Country" (Spolia Zeylanica, X., 119–165), Mr. F. Lewis records *Mimosa pudica* as "occasional." Exact localities are not stated, but the district traversed lies between Muppane, Panawa, and Kumuna. The record is of interest, in view of the gradual extension of this weed to the eastern parts of the Island. In 1908 the furthest point reached by it on the Lunugala-Batticaloa road was a few yards towards the east of Maha-oya. Apparently it has not yet (1916) arrived at Batticaloa.—T. Petch.

Agrimonia zeylanica Moon.—This endemic species is very near the common *A. eupatorium* of Europe, but, *fide* Trimen, is a sufficiently well-marked local variety to deserve a name. In fruit the spines of the calyx tube are red. For the purpose of comparison with the local species, seeds of *A. eupatorium* (*odorata*) were collected in Norfolk, England, in August, 1911, and sown at Hakgala in December of the same year. The resulting plants developed healthy rosettes, somewhat stout and pulvinate, but they made no attempt to flower up to August, 1915. The experiment was brought to a conclusion by their death during my absence on leave in 1915–16.—T. Petch.

Cuscuta chinensis Lam.—This species, recorded by Trimen for the Colombo District only and said to be very rare, was common in July, 1915, along the road to Gangaruwa, on the hillside facing the Botanic Gardens. It grew on practically everything it met, the particular species determined being *Argyreia populifolia* Chois., *Mikania scandens* Willd., *Ocimum gratissimum* L., *Mimosa pudica* L., *Spondias mangifera* Willd., and *Ficus parasitica* Koen. It was again abundant in July, 1916.

New Weeds.—*Erechtites valerianæfolia* DC. was observed at Hakgala in the shrubbery below the Botanic Gardens in April, 1912. In 1914 it began to be common in the neighbourhood of Peradeniya, and it has since been found at Lunugala and Watagoda. It is evidently spreading generally over the up-country districts.

Salvia tiliæfolia Vahl was found in abundance in April, 1912, on the site of abandoned cooly lines at Hakgala, near the oak plantation. It was again found on the site of an old boutique at Ambawela, May, 1913; in a similar situation below the Hakgala Gardens, 1915; and on waste ground below cooly lines at Bandarawela in August, 1916. In all cases it appeared to be flourishing, but attempts to grow it at Peradeniya from Ceylon seed have not been successful. Its constant association with native habitations suggests that the seed is used, medicinally or for some other purpose, by Tamil coolies, but I have not been able to obtain any information on this point as regards either Ceylon or India. It is apparently not known as a weed or casual in India.

From the Colombo District, the Rev. P. T. Cash has sent in *Acanthospermum humile* DC. (August, 1916) and *Mitracarpus villosus* Cham. et Schlect., the latter from the Victoria park (August, 1916). The latter led to the discovery in the herbarium of another species of *Mitracarpus*, probably *M. Torresianus* Cham. et Schlect., which had been sent in by Sir Solomon Dias Bandaranaike in June, 1912, and wrongly identified; the locality is not recorded.—T. Petch.

Nagadarana.—I am indebted to Mr. H. C. P. Bell for a specimen of "Nagadarana," which he informs me is carried by the snake charmers as a charm against snake bites. This

particular specimen was purchased in the Kandy bazaar under the name cited. It is the fruit of *Martynia diandra* Glox. The same identification was made by Mr. J. P. Lewis in Jour. Asiatic Society, 1884. Trimen gives for this plant only the Tamil name Nakatali (Nagatali). In India it is sold as an antidote to scorpion stings.

In the Botanic Gardens, Peradeniya, the name Nagadarana has for some years been applied to *Bauhinia anguina* Roxb. Clough (Sinhalese and English Dictionary) gives Nagadarana as " The creeping or winding of a snake ; circular path of a snake ; medicinal root efficacious in the bite of snakes." It would seem clear that the application of this name to *Bauhinia anguina* has been prompted by its peculiar twisted stem, and from this point of view the name is much more appropriate to the latter than to *Martynia diandra*. But *Bauhinia anguina* is practically confined to the Botanic Gardens ; it does not flower in Ceylon, and is most probably not native, but an early introduction. Under such circumstances, it is improbable that it should have a wide-spread native name, and hence we must regard *Martynia diandra* as the true Nagadarana.

The first discovery of *Bauhinia anguina* in Ceylon, other than in the Botanic Gardens, was made by Trimen, who found it at the foot of Doluwekanda, in the Kurunegala District. On his communicating the discovery to W. Ferguson, the latter wrote as follows :—" When we lived at Peradeniya in 1854 I recollect some one, native, paying us a visit with a walking stick made of what he called Naga Tali, made of the flexuose stem of *Bauhinia anguina*, which was then in great force over the old gateway and pillars in the Gardens ; and I never saw or heard of it outside of these in Ceylon. But the plant is in such repute for frightening away snakes that bits of it may have been taken by the plumbago diggers to Doluwekanda, and that may account for the plants you got there."

It is interesting to note that the reputation of *Bauhinia anguina* as a charm against snakes has extended over more than sixty years, and that both the native names of *Martynia diandra* have been applied to this plant.—T. Petch.

NOTICE.

The following reprints are for sale at the prices marked :—

	Rs.	c.
Willis : A Revision of the Podostemaceæ of India and Ceylon, 70 pages	1	50
Willis : Studies in the Morphology and Ecology of the Podostemaceæ, &c., 200 pages, 33 plates	7	50
Lock : Studies in Plant Breeding in the Tropics : II., Experiments with Peas, 58 pages	2	0
Lock : On the Growth of Giant Bamboos, &c., 56 pages, 3 plates	2	0
Wright : The Genus Diospyros in Ceylon, &c., 185 pages, 20 plates	6	0
Petch : Descriptions of new Ceylon Fungi, 10 pages ..	0	50
Parkin : Fungi parasitic upon Scale-Insects, 72 pages, 4 plates	3	0
Petch : The Fungi of certain Termite Nests, 86 pages, 17 plates	5	0
Smith : On the Application of the Theory of Limiting Factors to Measurements and Observations of Growth in Ceylon, 73 pages	2	0
Willis : The Flora of Ritigala, 32 pages	1	0
Willis : The Geographical Distribution of the Dilleniaceæ, &c., 9 pages	0	25
Willis : Further Evidence against the Origin of Species by Infinitesimal Variations, 4 pages	0	25
Petch : Revisions of Ceylon Fungi, 48 pages	1	0
Smith : The Effect of the Moon's Phases on the Period of Felling Bamboos, 6 pages	0	25
Jowitt : Note on *Apluda varia* Hack, 4 pages, and figures ..	0	25
Petch : The Phalloideæ of Ceylon, 46 pages, 11 plates ..	5	0
Lock : A Preliminary Survey of Species Crosses in the Genus Nicotiana, 34 pages, 12 plates	2	0
Willis : The Floras of Hill Tops in Ceylon, 8 pages ..	0	25
Petch : On Lasiodiplodia, 22 pages	0	50
Petch : Further Notes on the Phalloideæ of Ceylon, 22 pages, 5 plates	2	50
Lock : Notes on certain Seedlings of Cymbopogon, &c., 6 pages ..	0	25
Willis & Smith } Corrections and Additions to Trimen's "Flora of Ceylon," 1893–1911, 40 pages	1	0
Petch : Ustilagineæ and Uredineæ of Ceylon, 34 pages ..	1	0
Petch : Revisions of Ceylon Fungi (Part III.), 37 pages ..	1	0
Lock : Notes on Colour Inheritance in Maize, 8 pages ..	0	25

CEYLON PUBLICATIONS.

FOR SALE AT THE GOVERNMENT RECORD OFFICE, COLOMBO.

Oriental Literature.

	Rs.	c.
The Mahawansa, original Pali edition ..	10	0
The Mahawansa, English translation (Turnour and Wijesinha) ..	7	50
The Mahawansa, translations of Chapters I. to XXXVII., by Dr. W. Geiger ..	10	0
The Mahawansa, Sinhalese Translation, Parts I. and II. .. each Part	5	0
The Mahawansa Tika, with original Pali	7	50
Dipavamsa and Mahavamsa ..	1	50
The Rajavaliya (English and Sinhalese), each	0	75
Extracts from the Pujawaliya (English)..	1	0
Do. do. (Sinhalese)	0	75
Nitinighanduwa, Sinhalese ..	1	0
Kawsilumina (Sinhalese)	1	50
Rajaratnakaraya (Sinhalese) ..	0	50
Nikaya Sangrahawa (English) ..	0	50
Do. (Sinhalese) ..	0	25
Abhidhanappadipika, a Dictionary of the Pali Language	3	0
Mahasaddaniti (Advanced Pali Grammar)	7	50
Mugdhabodha Wyakarana (Sanskrit Grammar)	5	0
Mukhamattadipani (Pali Grammar) ..	5	0
Catalogue of Pali, Sinhalese, and Sanskrit Manuscripts in Temple Libraries ..	0	50
Alwis's Descriptive Catalogue of Sanskrit, Pali, and Sinhalese Works (Vol. I.) ..	5	0
The Tesawalamai	0	50
Glossary of Native Words occurring in Official Documents	0	30
Pybus's Mission to Kandy ..	0	50
Papers on the Custom of Polyandry as practised in Ceylon	0	15
Mediæval Sinhalese Art ..	55	0
Notes on Kandyan Chiefs and their Dresses	2	0
Old Sinhalese Embroidery ..	0	40

Archæology.

	Rs.	c.
Dr. Müller's Report on Inscriptions of Ceylon :—		
Text	5	0
Plates	5	0
Architectural Remains of Anuradhapura (with plates), by J. G. Smither :—		
In boards	40	0
In cloth	60	0
Return of Architectural and Archæological Remains, &c., in Ceylon ..	1	20
Reports on the Archæological Survey of Ceylon :—		
Kegalla District	6	0
Anuradhapura (I.)	0	50
Do. (II.)	1	0
Do. (III.)	1	65
Do. (IV.)	1	0
Do. (V.)	2	20
Do. (VI.)	2	0
Do. (VII.)	4	0
Annual Reports, 1890–1901 each	0	50
Do. 1902	2	50
Do. 1903	3	0
Do. 1904	1	0
Do. 1905 to 1909 each	4	0
Do. 1910–11	6	0
Do. 1911–12	7	50
Do. 1912–13	1	0
Summary, 1890–1900	2	50
Plans and Plates for 1892–1894 Reports	21	0
Do. 1895–1902 Reports	21	0
Epigraphia Zeylanica, Vol. I., Parts I. to VI., and Vol. II., Part I. each	4	0

Natural History.

The Flora of Ceylon, by Dr. Trimen :—		
Parts III., IV., and V. (with plates) each	20	0
Lepidoptera of Ceylon, in 13 Parts, with coloured plates .. each Part	14	50
Report on the Ceylon Pearl Fisheries ..	1	35
Prof. Herdman's Report, Vols. 1 to 5, each	15	0
Marine Biological Reports, Parts III., IV., V., and VI. .. each Part	2	0

District Manuals.

Nuwara Eliya, by C. J. R. Le Mesurier ..	5	0
Vanni Districts, by J. P. Lewis ..	5	0
Puttalam District, by F. Modder, F.R.G.S.	2	50

	Rs.	c.
Ceylon Blue Book	10	0
Administration Reports (annual volumes) ..	Rs. 10 and 15	0
Sessional Papers (annual volumes)	Rs. 7·50 and 10	0

TO BE OBTAINED OF H. W. CAVE & Co., COLOMBO.

	Rs.	c.
The Ruined Cities of Ceylon. Demy 8vo. Illustrated with collotypes	2	50
The Book of Ceylon: being a Guide to its Railway System and an account of its varied attractions, for the Visitor and Tourist. By H. W. Cave. Illustrated from photographs by the Author ..	9	0
The Book of Ceylon:—		
Section 1, containing Colombo, the South-West Coast, and the Kelani Valley	3	0
Section 2, containing Kandy and the Highlands, including Nuwara Eliya, Bandarawela, and Badulla	4	50
Section 3, containing the Northern Provinces, including Anuradhapura, Jaffna, Trincomalee, the Pearl Fishery, and Rameswaram	3	0